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Rail Road Economy.

The New York and Erie Rail Road have adopted a system of keeping a separate account with each locomotive on the road, embracing No. of engine; miles run; cost for Engineer and Fireman; gallons of oil used; miles run to one pint of oil; pounds of waste used; pounds of tallow used; cost for oil, waste and tallow; cost per mile run for oil, waste and tallow; cost for repairs of engines; cost per mile run for repairs of engines; cords of fuel used; cost of fuel; cost per mile run for fuel; total cost; total cost per mile run; tuns useful load carried one mile; cost of useful load per mile per tun: tuns of useful load and dead weight carried one mile.

A report of the operations of the Road for the month of May have been issued by its diligent Superintendent, D. C. McCallum, Esq., which contains the following interesting statistics:

	Cents.
Cost per mile run, Engineers and Firemen	5 3-8
Cost per mile run, oil, waste and tallow	1 3-8
Cost per mile run, repairs of engines	6 7-10
Cost per mile run, fuel	10 9-10
Total cost per mile run	24 2-3
Miles run to one pint of oil	14 5-8
Miles run to one cord of wood	29 3-10
Average cost of wood, cord	$3 19

There is appended to the document a comparative statement, showing the results of working several engines on the different divisions. The name of the engineer, the number and kind of his locomotive are given, in order to excite a laudable ambition.

COST OF FUEL.—The following is a table showing the cost of fuel on this Rail Road for the first five months of the year:

	Miles run.	Cost of fuel	Cost pr. m. run in cts and mills.
January	299,797	$50,934 57	17.4
February	259,234	47,094 17	18.1
March	287,501	45,780 55	15.9
April	237,845	34,477 84	14.5
May	247,278	27,868 89	11.3

This shows a most important saving in fuel—a third and one mill per mile, and affords evidence of an able, vigilant superintendence.

COST OF OIL ON THE CENTRAL RAIL ROAD.—The same system of monthly accounts, we have been informed, has also been adopted on the New York Central Railroad. We have the returns of the cost of oil on two of the Divisions of this Rail Road for the month of May last. They are as follows:

Divisions.	Miles run.	Pints oil used.	Mls. run to 1 pint oil.
Syracuse and Utica	39,265	3,256	12
Syracuse and Rochester	73,659	5,804	13 1-2
Total	117,924	9,070	12 1 2

These returns are for 18 locomotives on the Syracuse and Utica section, and 31 on the Rochester and Syracuse division. This will afford our readers some idea of the vast amount annually expended for lubricating materials on Rail Roads. There is plenty of room for new and useful improvements in this direction.

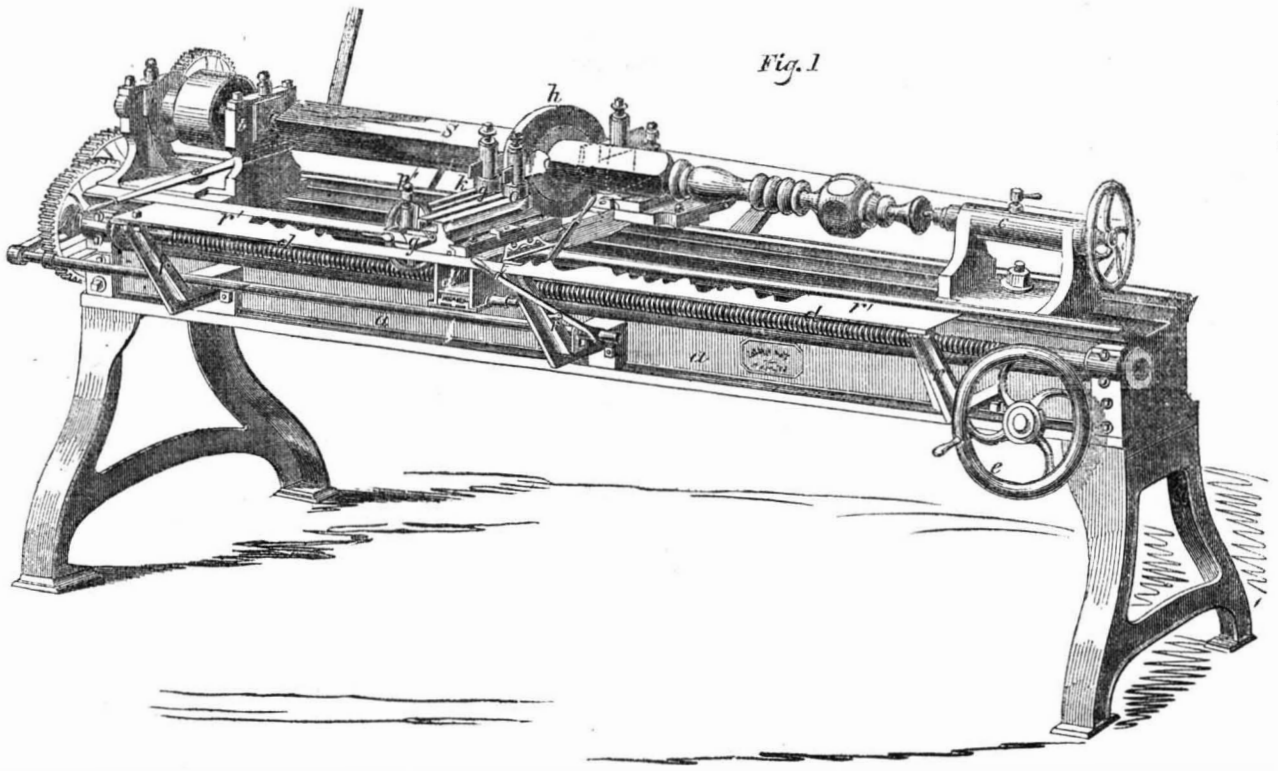
Tennessee Copper Ore in England.

The Tennessee Copper mines have sold 2000 tuns of ore in Liverpool since March last. The lowest price was £20, 12s, 6d, and the highest £37, 10s. per tun. The prospects of the Tennessee mines are stated to be good, the yellow sulphuret ore being in great demand in England.

Business is fast reviving throughout our manufacturing districts; the prospects for a brisk Fall trade are good.

SELF-ACTING LATHE FOR TURNING ORNAMENTAL WORK.

Fig. 1

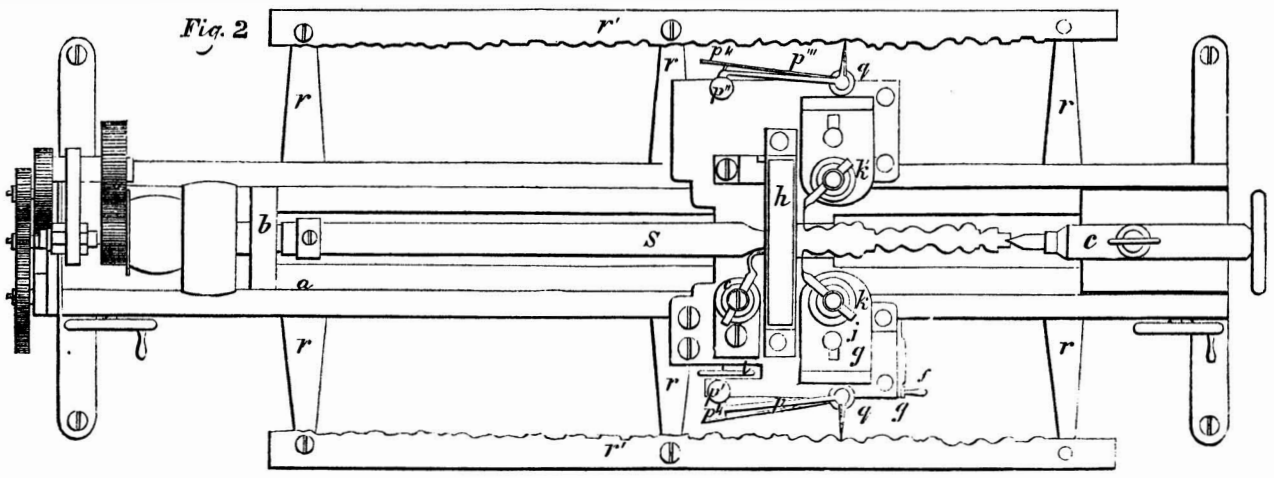


These engravings illustrate an improvement in self-acting lathes for turning such ornamental work as pianoforte and table legs, bed posts, &c., from patterns, for which a patent was granted to Albin Warth, on the 10th of last October.

Figure 1 is a perspective view, and fig. 2 is a bird's-eye or top view.

a is the frame of the lathe; *b* is the head stock; *c* the back puppet; *d* the feed screw to move the slide rest, *g*, and *d'* is its clamp; *h* is a ring support; *k k'* are finishing tools. *o* is a roughing hooked tool; *p p'''* are guide levers, and *l* an adjusting screw; *r' r'* are guide patterns; *p' p''* are the guide lever fulcrums. *p⁴* is a spring on the guide lever; *q q* are tracer guide points following the configuration of the patterns to guide the tools, *k k'*. *r r* are supports for the guide pattern. A stick is now in the lathe, part of which is turned; *S* is the unfinished part of it. The roughing tool, *o*, the finishing tools, *k k'*, the guide traces, *q q*, and their levers and fulcrums, together with the clutch, *d'*, and lever all belong to the slide rest, *g*. The screw, *d*, moves the slide rest in the usual way, by cogged gearing at the one end of the lathe. The clutch, *d'*, is for gearing the slide rest with the screw, *d*, by means of a spring lever, *t*, fig. 1 (*f* fig. 2.) By throwing the spring lever, *t*, outwards, the clamp, *d'*, clutches screw *d*, and the slide rest with its various appurtenances (as now shown) advances. By throwing the lever, *t*, inwards, the clamp is released from the feeding screw, *d*, and the slide rest stops. Previous to putting in the stick of wood to be turned, the slide rest is brought up to the right hand end of the lathe until the center screw of puppet, *c*, passes through the opening in the ring, *h*. The stick, *S*, is then secured between the head stock, *b*, and the puppet screw, *c*, in the usual way. The hooked tool, *o*, fig. 2, is then set to cut away the stick in front of ring *h*, to such a size as will allow it (the stick) to pass through the opening in *h*. Motion having been given to the mandril of the head stock on which is a pulley operated by a band, the stick, *S*, rotates, and the slide rest advances. The tools, *k k'* then cut the pattern on the stick, as shown by the guide tracers, *q q*, pressing against the back heads of said tool stocks, which are hollowed on the under side, and are fitted with springs which have their tension against the tracers. The tool stock of the finishing cutters, *k k'*, are allowed to slide in and out towards the stick on guide pins, *j*, which work in slots. The tracer guides, *q q*, as they are moved on the face of the pattern guides, *r' r'*, have each a friction roller pressing on the back of the tool stocks of the finishing cutters, thus making them trace and cut the pattern on the stick. The tracers, *q q*, are also attached to the spring levers, *p p'''*, and they can be raised so as to elevate the tracer guide points above the pattern, *r' r'*, and not touch them. The slide is reversed quickly in the common way. It will be observed that the tool stocks have a transverse motion outward and inward by the tracers, so as to make them act on the stick, and be governed by the configuration of the guide plates, *r' r'*. The ring, *h*, supports the stick in the lathe as the slide rest is moved along, and prevents the stick springing. Every new pattern, to be sure, requires new guide plates, but an endless variety of these can cheaply and easily be made and kept, so as to turn out a great variety of such ornamental turning. When it is desired to leave any portion of the stick square, as in fig. 1, a ring plate with a square opening is substituted.—Various ring plates may be used. In consequence of the guide spring levers, *p p'''*, having fulcrums at *p'* and *p''*, the cutters are kept perfectly free from jarring or vibration, so that the very finest and most delicate work may be produced in this lathe with ease and precision.

Fig. 2



This invention is one of the most ingenious and important improvements in its line that has been patented for a long time. Its operations are truly remarkable. We saw it at work not long since, when it was employed in producing table legs. All that the attendant had to do was to place the rough sticks between the centers, and in a second or so they were transferred into table legs, turned with the most beautiful configurations, and the work wholly finished,—no sand-papering or re-touching to be done afterwards. It may be used for producing every conceivable variety of ornamental or plain turning, and may be relied upon for perfection in its results. The machines are substantial, easily managed, and not costly.—Apply to Richard E. Dibble, General Agent, No. 360 Broadway, New York, for further information.

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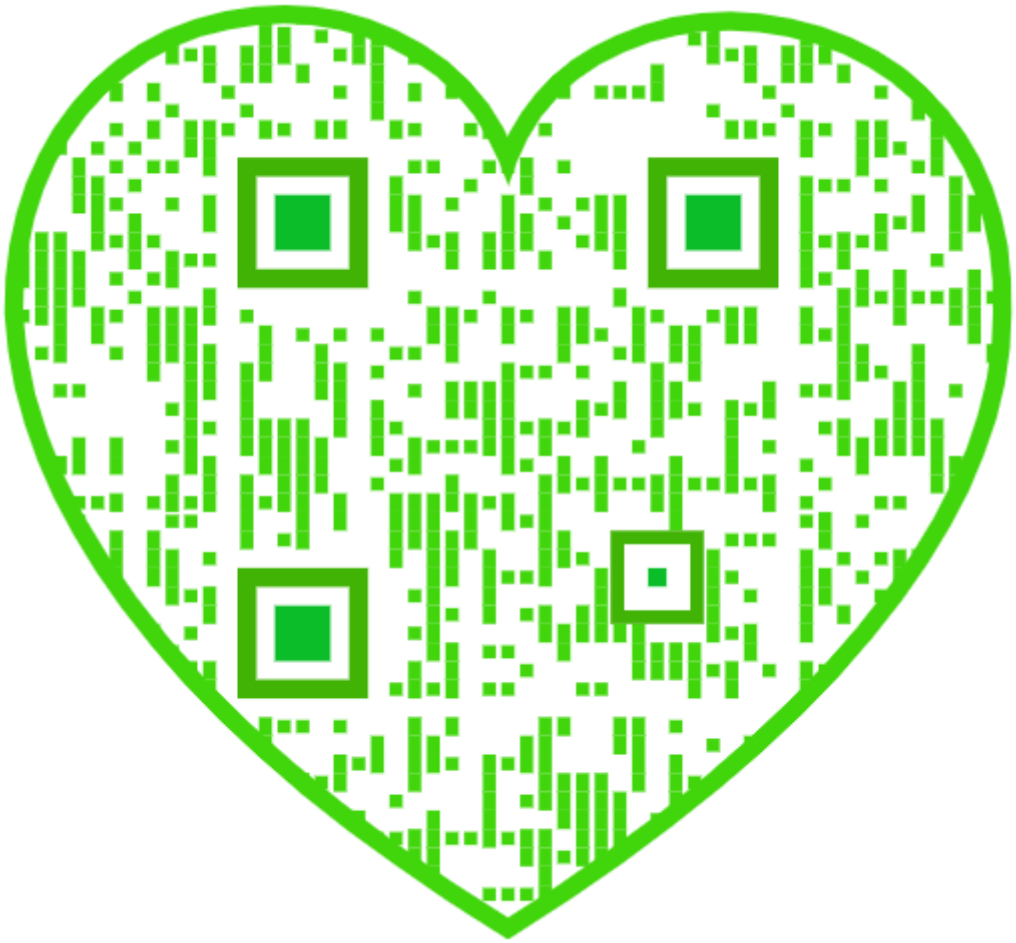

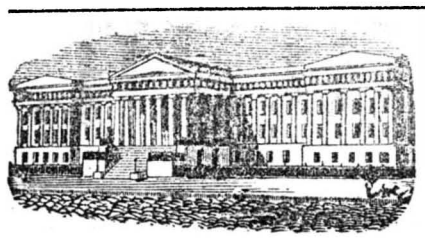

[Reported Officially for the Scientific American.]

LIST OF PATENT CLAIMS

Issued from the United States Patent Office,

FOR THE WEEK ENDING JULY 31, 1855.

WASHING MACHINES—John H. Atwater, of Kalamazoo, Michigan: I claim the arrangement of the washing frame, m, n, o, v, and the endless platform of slats, h, h, together with the respective parts combined therewith, in such a manner, that the same first mover, will, at the option of the operator, simultaneously impart a reciprocating movement to the washing frame, and a forward or a rearward movement to the said platform, or operate the said washing frame substantially in the manner, and for the purpose set forth.

FEEDING PLANKS TO PLANING MACHINES—Nelson Barlow, of Newark, N. J.: I claim the self-adjusting frame, B, connected by axles or any equivalent means, to the main frame, when combined with the cylinder and fixed rollers, as specified.

FAN-BLOWER—Simon Barnhart, of Chillicothe, Ohio I claim, providing each of the blades of the fan with a lip or flange, b, c, substantially as, and for the purposes set forth.

[In this improvement the blower is arranged in the usual manner, except that the fan blades are furnished, at one end, with lips, spirally curved, something like a screw propeller; so that when the fan revolves, the lips act on the air and draw a larger quantity into the blower than could otherwise enter. In this simple manner the blast of the blower is considerably augmented, without perceptible increase in the propulsive power, or the cost of construction. It is an effective improvement, and applicable with great advantage wherever blowers of any kind are employed.]

WASHING MACHINES—Oliver D. Barrett, of Fulton, N. Y.: I claim providing a pail with a foot piece and treddle, in combination with the connecting rods, lever, and sectors operating the rollers, by which combination the rollers are thrown apart by their own weight, and brought together by means of the foot, and the action of the mop in being pulled out between them.

AIR ENGINES—John Ericsson, of New York, N. Y.: I claim the method of supplying fresh air to the engine, compressing and transferring it to the regenerator and heater, or either, by the action of the supply and working pistons within the one cylinder, operating on the principle and in the manner substantially as described, whereby the air is admitted under atmospheric pressure, as the supply piston is moving from the working piston—as the previous charge of heated air is exhausting; so that the said supply piston moves in equilibria, or nearly so, and by which also the supply air is finally compressed and then transferred to the regenerator and heater, or either, as the supply piston moves between the supply air and heated air, during the periods of the nearly stationary position of the working piston.

I also claim, in combination with the double piston movement of each cylinder, the methods of connecting the working pistons of two single acting engines, to constitute a double acting engine, by means of two sets of vibratory arms attached to each other, and vibrating on a common center, connected with the two working pistons, and with the two cranks on opposite sides of the crank shaft, the two sets of arms acting on the principle of the bent lever, and the crank shaft being so located relatively to the cylinders and the centers of vibration of the arms, substantially as described, that the working piston shall be at the end of its inward stroke, at the time the crank is passing the dead point furthest from the point of connection of the connecting rods with the vibrating arm, as described, by which the power of that working piston, which is being impelled by the heated air, is applied to the best advantage to operate the other working piston during its return stroke, and by which, also, the working piston remains nearly at rest, during the time the supply piston is making that part of its outward stroke during which the partially compressed air is finally and fully compressed and transferred to the regenerator and heater, or either, as described.

FOR RULING AND PAGING PAPER—John A. Elder, of Westbrook, Me., and John Richardson, of Portland, Me.: We claim, first, the arrangement of machinery for the ruling, printing, and paging paper for the manufacture of blanks, books, or other like purposes, when the ruling, printing, and paging is done before the paper is removed from the car or table where it is ruled, as specified.

2d. We also claim the combination of a car or table, B, and ratchet bar, with its type rods, 5, or their equivalents, for the purpose described.

3d. We also claim the pliers or nippers, for the purpose of removing the paper from the car or table, when operated as described.

SIZING AND DRESSING WARPS—John A. Elder, of Westbrook, Me., and Ephraim Wood, of Winthrop, Me.: We are aware that other modes of construction and other forms and positions of the several parts might be adopted to produce the same results from the same acting principles; for instance, springs may be used instead of weights, and screws may be used instead of ratchets and catches for increasing the power on friction straps. We do not claim these devices as such, or any of them.

We claim the regulation of the speed of the yarn beams and rollers of the dressing frame, by the tension of the warps, in the manner substantially as described; namely, by the combination of the vibrating roller, U, with the rollers L, and I, rod G, and the hook, E, or the equivalents thereof; and these in combination with the ratchet, P, levers, 16 and 14, friction pulley, 10, and weight, 15, or their equivalents, when arranged in the manner substantially as described.

CROSS-CUT SAWING MACHINE—Frederick Field, of Toledo, Ohio: I claim the arrangement of the two circular saws, hung in a vibrating frame, and operated substantially in the manner set forth, in combination with the mode, substantially as described, of throwing the feed motion in and out of gear.

VAULT COVERS—James Harrison, Jr., of Milwaukie, Wis.: I claim attaching the cover, D, to the upper part of the opening or passage, A, of the vault, by means of the jointed arms or rods, d, d, f, f, arranged as shown, or in an equivalent way, for the purpose set forth.

[The design of the above invention is to protect foot passengers from falling down the holes of coal vaults—accidents that are of frequent occurrence in cities, and often attended with serious consequences. In this improvement the vault cover is permanently connected with the pavement by means of a couple of jointed levers, which permit the cover to be lifted, say two or three feet from the ground, where it will remain, erected on the levers. The hole is thus opened sufficiently for the deposit of the coal, while the unwary foot passengers cannot step down the opening, since the cover and levers form a sort of railing and protection. When the cover is replaced, the joints fold up, and, if tied together by a cord, the cover cannot be lifted from without, and is therefore burglar proof.]

COMPRESSING PUDDLERS' BALLS AND OTHER MASSES OF IRON—Solon S. Jackman, of Lock Haven, Pa.: I claim the compressing puddlers' balls or similar substances, by means of circular compressers, B, and C, so arranged that their peripheries shall have different degrees of speed, and their surfaces in contact with the mass to be operated on, shall cause its rotation on i s own axis, and by compression between them reduce the metal into a bloom, in the manner substantially as described.

SEWING MACHINES—Jas. Harrison, Jr., of Milwaukie, Wis.: I claim, 1st, Feeding the material to be sewed, by means of a feed plate, B, which is guided substantially as herein described, in the direction of any curved, circuitous, or irregular line of sewing, by means of grooves, d, d', or their equivalent, on its back side, of a form corresponding to the said line, receiving or working in contact with fixed pins, c, c', or other equivalent fixed guides, whereby motion is only allowed to the said feed plate in such direction as to make the material describe, in passing the needle, the intended line, the said feed plate receiving, motion by any mechanical device suitable for the purposes

2d. Combining the guide pins, c, c', or their equivalents with the shoe, C, which confines the feed plate and produces the necessary pressure of the plate on the material, substantially as specified.

[This invention consists of a very ingenious method of feeding and moving the material to be sewed. Its construction is as clearly set forth in the claims as can be, without drawings. By its use, the sewing of button holes, —a labor which no practical machine has ever before been able to accomplish—is done with extraordinary speed and astonishing precision. The graduation of the apparatus, so that it will sew holes of various sizes, from shirt button holes up to those of dress and overcoats, is perfect. The inven or informs us that it may be set to sew holes of a given size and all of them will be done unerringly alike, even to exactly the same number of stitches. Embroidery and all other kinds of curved or crooked sewing, may also be executed with equal facility. Any desirable number of duplicates or different pieces of work, all of them sewed or embroidered alike, according to any given pattern, or at any particular place, may be turned out with the utmost convenience. Simple in construction, easy of management, and applicable, at small expense, to nearly all the various kinds of sewing machines now in use, the improvement can hardly fail to find a very general introduction. The apparatus can be put on or detached in a minute's time; so that the common sewing machine may be used for embroidery, button holes, or ordinary plain work, at the pleasure of the operator. We regard this as one of the best and most valuable improvements in sewing machinery that has been made for a long time.

SAWING RATTAN—Liveras Hull, o. Charlestown, Mass.: I am aware that machines have been contrived for splitting a rattan longitudinally with one or more knives, the rattan having been supported between a series of rollers.

I am also aware that timber, attached to a rectilinear moving carriage, by dogging contrivances applied to its end, has been cut diagonally, by means of a saw.

I am aware, also, that it is not new to use an adjustable gauge bar in connection with a movable carriage and saw.

I am also aware that pressure rollers are used in planing machines for maintaining a board against a movable carriage or bed, during the operation of planing or dressing it.

The employment of such parts in a machine for sawing rattan, requires a specific arrangement of them, or one which differs essentially from their arrangement in various other kinds of mechanism, such an arrangement having been before explained.

I therefore claim the above described arrangement of the rectilinear moving carriage, B; the adjustable holding bearer, D; the groove pressure roller, and the saw, whereby, when a stick of rattan is clamped to the adjustable bearer, and the carriage, B, is moved forward so as to carry the said stick endwise against the saw while the latter is in revolution, such stick shall be sawed in a diagonal direction, in manner and for the purpose as specified.

CIRCULAR-SAW MANDREL—Fielding H. Keeney, of Newport, Ky.: I claim the mode of making a mandrel, as set forth, not confining myself to exact size or shape, as described, but to the principle of the machine, as herein set forth, or any other equivalent device, to produce the same effect.

DISTILLING COAL WITH HYDROGEN GAS—Stephen Meredith, of Meadville, Pa.: I claim the production of Naphtha, Benzole, and other Hydro-carbon liquids, by the distillation of Cannel, or other bituminous coal, in an atmosphere of heated hydrogen gas, or in a retort to which a stream of heated hydrogen gas is admitted during the distilling process, substantially as, and for the purposes set forth.

[It is well known to chemists and others who have experimented in the destructive distillation of coal, that at different degrees of temperature products of very different character are produced—gaseous, liquid, and solid. The gaseous products consist of Marsh gas, Olefiant gas, Carburetted hydrogen, and carbonic acid. The liquids consist of bodies closely analogous to Petroleum, and the solids are Coke and Mineral Pitch. The relative proportions of the above products vary with the temperature of the retort; the lower the temperature the less gas and the more liquid produced, and the higher the temperature, the larger the volume of gas.

The object of Mr. Meredith's invention is to expedite the process of distillation, and this is accomplished by the admission to the retorts, during the distilling operation, or a jet of heated hydrogen gas. In this way the liquids are distilled in an atmosphere of hydrogen, and thus preserved from igneous decomposition, while the hydrogen at the same time takes up a portion of the sulphur and ammonia, contained in the coal. The result is the production of Naptha, Benzole and Coke, all the very best quality, at small expense. This is an important and useful invention.]

CUT-OFF VALVES FOR STEAM ENGINES—Frederick Perry, of Newark, N. J.: I claim the combination of the channels, a, a, and holes, p, p, with the cut-off valves, D, D, and exhaust recess, O, as described, or their equivalents, for the purposes herein set forth, or any other purpose for which they are suitable, merely modifying the parts to suit circumstances, while the principles involved are the same.

VENTILATING HATS—William Sellers, of New York, N. Y.: I claim, first, making the hat or other similar head covering to open at its side or sides, by dividing the body of the hat, and connecting or arranging the separated portions or sections of the body, so that the one portion of the body may be adjusted to form an open or close connection with the other portion of the body, substantially as, and in the manner specified.

Second. Providing the divided body, at the junction of the two sections, with a gimp guiding strip, or reticulated telescopic lining or casing, D, arranged for operation in connection with the movable section of the body, essentially as, and for the purposes set forth, and whereby an ornamental and unbroken appearance is given to the hat all round, when the body of it is open for ventilation, as described.

[It is said that one of the principal reasons why men become bald headed so much sooner than women, is on account of the universal practice, by the former, of wearing tight hats. It is alleged that such hats are the means of keeping the head hot and the hair in a continual bath of foul moisture and bad atmosphere; whereas, the light bonnets of the fair sex, permit a free circulation of air, and thus prevent all the foregoing injurious effects.

The patentee of the above improvement by a very ingenious contrivance, ventilates a gentleman's hat in the most perfect manner, and enables the wearer to regulate the temperature of its interior at pleasure. The crown of the hat is made into two parts, connected by slides, so that the upper portion can be lifted apart from the lower, and held up by the slides; a free opening is thus made for ventilation. When the wearer wishes to close his hat, he merely presses down the top of the crown with his hand.

This invention is very simple, cheap, and useful. It must greatly promote one's comfort—in warm weather especially. It is a good improvement and should come into extensive use.]

SEWING MACHINES—Isaac M. Singer, of New York, N. Y.: I claim the combination of the lifter, substantially as specified, with the vibrating feed plate and pressure pad, substantially as, and for the purpose specified.

[Mr. Singer has become a Nestor in the discovery of Sewing machine improvements. Hardly a week passes without the issue of one or more new patents for his inventions. His sewing machines have been greatly improved within the past year, until now they are in the highest degree perfect. Himself and partners have already made large fortunes from the sale of their machines, and their business is rapidly increasing. We are glad of it. No one man has done so much towards the introduction of these great labor saving machines as Isaac M. Singer. He ought to be well rewarded.]

WATER GAUGES, FOR STEAM BOILERS—Paul Stillman, of New York, N Y.: I claim the described glass water gauges, in their construction and arrangement as specified, with the cocks having the axes of their chambers and keys in line with that of the glass tube, and the chambers having double water ways, for the purposes set forth, and the movable guard rods supported by lugs on the chambers, in the manner described.

EXCLUDING DUST FROM RAILWAY CARS—Elam C. Salisbury, of New York, N. Y.: I do not wish to limit myself to any special mode of inclosing the sides of cars, or connecting the sides at the junction of the several cars of a train, nor of inclosing the space between the platforms at the junction of the several cars, as these separately make no part of my invention, and they may be variously modified within the range of my invention.

But I claim the method, substantially as specified, of preventing the dust which is agitated and thrown upon the track by the passage of a train, from rising up and entering the doors, windows, and other apertures of cars, by inclosing the sides of the train from the bottom of the cars to within a short distance of the track, and closing up the spaces between the platforms of the several cars, substantially as, and for the purpose specified.

[This invention is in use on the Hartford and New Haven Railroad, Ct., and is said to operate very advantageously. It is the cheapeest apparatus for the purpose that we know of.]

MUSICAL REED INSTRUMENTS—George S. Shepard, of Canaan, N. H.: I claim the combination of the auxiliary sounding chamber, B, and the swell chamber, A, with the valve chamber, I, substantially in the manner and for the purpose set forth.

BUCKET FOR WATER WHEEL—C. C. Taylor, of Delafield, Wis.: I claim swelling the outer portion of the bucket into a conical surface, as described, and combining the same with the double inclined plane, e, d, substantially as, and for the purposes specified.

SOAP CUTTING MACHINES—Anton Van Haagen, of Cincinnati, Ohio: I claim the ranges, f, f', of vertical wires, at right angles to each other, in combination with the drivers, b, b', moving at right angles to each other, and the ranges of rollers, k, l, and j, for the purpose of cutting blocks of soap directly into slabs and bars at one operation, and without handling thereof, when once on the machine.

SOAP CUTTING MACHINES—Anton Van Haagen, of Cincinnati, Ohio; I claim, first, the arrangement and combination, substantially as described, of a series of wires for cutting soap; said wires being stretched by means of springs, for the easy formation of a loop at the commencement of cutting, and gradual increase of tension until the wire has entered the block.

Second. The combination, substantially as described, of grooved carriage, grooved driver, stationary and vertical range of horizontal wires, and descending horizontal range of horizontal wires, for the purpose of slabbing and barring a block of soap, without handling the latter after it is once placed upon the machine.

Third. The bed or carriage, and driver scored transversely by grooves, adapted to the loop of the wires, for the purposes explained.

OPERATING STEAM VALVES—Norman W. Wheeler, of Cincinnati, Ohio: I am aware that valves of steam engines have been actuated by steam pressure applied to pistons other than the main working pistons in the "starting gear" of the early German and English river and marine engines, and that the separate and individual parts of the engine are old and well known, and do not claim them; neither do I claim closing cut-off valves by steam pressure released from the working cylinder through a passage opening into said cylinder, near the desired point of cutting off.

I claim, first, actuating the induction and eduction valves of any double acting reciprocating steam engine, by means of steam pressure derived from the working cylinder, and released therefrom by the passage of the working piston over and beyond appropriate ports, when the pistons, or their equivalents, upon which such pressure acts, are so arranged that no movement of the valves shall result from the passage of the working piston over the first of two or more such ports in any full stroke.

I claim releasing the steam contained between pistons of unequal areas, by the passage of the larger one over its exhaust port, and stopping the supply between the same pistons, by the passage of the smaller one over its induction port, substantially as described.

DIRECT ACTING HYDRAULIC STEAM PUMPS—Henry R. Worthington, of Brooklyn, N. Y.: I claim the described mode of counteracting the resistance to the motion of the pump piston in direct action pumping engines, by which the steam valve is moved, that is to say, by making a passage into the pump chamber or cylinder, so arranged that said passage or opening shall for a time be uncovered or disclosed, at or near the end of each stroke of the piston, by which the fluid which is beyond or above the force valves passes behind the water piston and makes pressure thereupon in the direction of said piston's motion, for the purposes set forth.

WRITING DESKS—William G. Wolf, of Philadelphia, Pa.: I claim the horizontal inclined levers, E, and inclined and declined planes, J, with the upright traveler, H, working thereon, which causes a graduation, that of a desk to be formed, or else entirely concealed, at pleasure, as described, using for that purpose the aforesaid horizontally inclined levers, inclined planes, and upright traveler.

WASHING MACHINES—Samuel M. Yost, of Connersville, Indiana: I claim the arrangement of two corrugated rollers, one above, and washing into the other, without coming in contact with the lowest lines, and each being tightly covered with canvas or other strong material, the whole combined and operating in such a manner as to effectually wash any cloth submitted to it, and without breaking the buttons or other hard substances upon the linen or cloth.

SEEDING MACHINES—Lucian N. Bigelow, of Cuba, N. Y.: I claim the use of a screen for the purpose of sowing grain broadcast, so arranged with a feeding hopper and slides, as to regulate the quantity of grain to be sown, when acted upon by trip-hammers, to secure its uniform and proper distribution, in the manner set forth.

HOT AIR FURNACES—Samuel A. Briggs, of Providence R. I.: I claim the passage, R, leading from the chamber, M, to the hot air chamber, E, in combination with the damper, S, crank, T, and rod, U, operated in manner as described, and for the purpose as specified.

OVENS—John P. Hayes, of Philadelphia, Pa.: I do not claim arranging or combining two ovens together, the one over the other, nor a movable box fitting within the same, and forming the inner lining of an oven, as these have been known and used before.

Nor do I claim causing the hot air of one oven to pass into the other, nor the application of a partition plate so as to divide the space above the movable lining box into a direct and returned flues, nor the combination of direct and dumb flues for heating the ovens, nor ventilating and producing a circulation of hot air within an oven irrespective of the peculiar construction, arrangements or combinations of the several devices, as specified.

But, first, I claim the pipes or hot air flues, P, P, extending up one or more of the heating flues of an oven, the same opening into the oven near both the top and bottom of the same, so as to form a communication between the upper and lower strata of air in the said oven, through the gas flue or flues in which they are located, and the said flues, P, P, opening also near the bottom of the same to the outside of the said oven, for the purpose of admitting fresh air into the said oven, substantially in the manner as described and set forth.

Second. I claim making the partition plate, K, so as to move or yield upward, substantially as described and set forth, when the same is used in combination with the movable box or lining, d, of an oven, for the purpose of allowing the ready admission or withdrawal of the said movable box, as occasion may require.

ARTIFICIAL LEGS—William H. Rhodes, M.D., of Berlin, N. Y.: I claim the knee joint as described in specification and drawing, and ankle joint, as set forth.

Secondly, I also claim the standard, f, f, and brace, g, with their hinge joint connection to foot plate: coiled spring, with rollers to hold the same, which retains the brace and standard in position when walking, as set forth. These principles and improvements united, forming the within apparatus, which is of great utility to the afflicted.

WASHING MACHINES—Josee Johnson, of Washington, D. C.: I claim the arrangement and combination of disk, D, pestles d, and spiral springs, J, or their equivalents, which form the pounder, as described and set forth.

ADDITIONAL IMPROVEMENTS.

FIRE ARMS.—Frederick Newbury, of Albany, N. Y.—(Patented, originally, March 20, 1855): I claim the following parts of the apparatus described, as substitutes for certain parts of the apparatus described in the Patent of the 20th March, 1855, referred to in these specifications, viz:

The construction and arrangement of the hammer and trigger, with their parts, as substitutes for the sear lever and tumbler.

The ratchet action plate with its cam slot, as a substitute for the ratchet lever, and ratchet pawl. The cylinder-spring stop-lever, as fitted and applied, as a substitute for the united actions of the click lever and stop catch lever.

I claim the combination of the hammer, trigger, ratchet action and cylinder spring stop lever, to operate jointly in the process of firing.

I also claim the apparatus for detaching and re-attaching the barrel to the stock, viz.: the bent lever lying in a recess within a metal projection from the barrel, with its catch at its back end, fitted to hold into a notch in the stock, and kept in place by a spring lying within the said recess, in combination with the hinge plate, (which plate I disclaim)—this arrangement being a substitute for the thumb connecting plate. The whole of these various devices, substantially as set forth.

DESIGN.

FRANKLIN FIRE PLACE—Nathaniel P. Richardson, of Portland, Me.

Trial of Agricultural Implements at the French Exhibition.

Horace Greeley, Esq., Editor of the *N. Y. Tribune* attended a trial of Plows and Mowers on the 7th July last, at Guignen, the "Imperial" College of Agriculture, some twenty-five miles west of Paris. He says:—"A great number of Plows were taken from the Exhibition and tried here, and that of the Messrs. Howard, Bedford, England, was pronounced the most effective. I understood Mr. James Howard, one of the makers, to state that, as carefully tested by the dynamometer, on clover sod, being drawn by two smartly-walking horses, it turned a furrow ten inches wide and six and a half deep, with a medium draft of only 182 pounds, or a little more than half its own weight. There are a good many men who could draw this plow at that gait, and almost any two men could easily do it. There was no plow entered from our country, (we have none in the Palace,) but one from Canada was tried and did good work. Most of the plows entered from the continent proved beneath contempt, as was to be expected. Some of them required over *quadruple* the power to propel them that was exacted by the winner, and one from Austria, that was confidently bragged on before the trial, actually twisted around, broke off, and gave up the ghost, in light clover soil free from root or stone, and with but a single span of horses before it!

We all went out in the afternoon to a large clover-field, where quite a cluster of the farmers of the vicinage had assembled to witness the operation of Mr. McCormick's Mower —one of the very few (I regret to say) Yankee farming implements on exhibition. There was no competition at this time, but the machine worked admirably, cutting very smoothly, closely and clearly, a swath five feet wide as fast as the span of horses drawing it could walk, and evidently making very moderate demands on their muscles. The ground was quite uneven, and at one place the grass was vigorously stamped down by the spectators, in order to test the machine under the most adverse circumstances. In this way some stalks were made to escape cutting, but the machine was nowise choked nor impeded. The most satisfactory feature of the performance was the entire abstinence of Mr. McCormick's agent, after the first round, leaving the machine to be operated entirely by French laborers who never saw it before that day. There was a very general and hearty manifestation of delight from the assembled farmers, and I trust that not this only but other American machines also will be tested again, and put in competition with those of Europe, under the eye of a critical committee. If the Exhibition is to be anything better than a novel show, here is (in fact) its proper element.

A New Way to Raise Beans.

A gentleman in Seneca Falls, N. Y., last spring, planted some Lima beans. Not being provided with poles, he supplied their place by planting in each hill sunflowers, trimming them up so that they served the purpose of poles For a time all went on well, till, at length, the sunflower growing so much faster than the beans, the latter were absolutely drawn up by the roots.

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Information Relating to Steam Engines.

We oftentimes receive letters from correspondents requesting us to tell them the horse power of their engines; this we can easily do when the diameter of piston, the pressure of steam, and the velocity of piston are given; but unless this is done we cannot give the required answer. To such inquirers the following will be useful information:

The unit of a "horse power" is 33,000 lbs. lifted one foot high in a minute. To calculate the horse power of any engine, multiply the area of piston in square inches by the pressure of steam in pounds on the square inch, and by the velocity of the piston, and divide the product by 33,000; theresult is the nominal horse power of the engine. It is the common practice, however, to deduct the fourth of this, as being expended on the engine itself, that is absorbed by friction and not given out to the machinery which the engine may be driving. For this reason some engineers use the divisor 44,000 in estimating the horse power of their engines. This is the case with the Clyde engineers, (the builders of the Cunard steamers,) the engines of which are rated lower than American ones of the same power.

We sometimes also receive letters making inquiries different from the above, relating to steam engines, and although easily answered by those who understand the subject, they involve considerable time and trouble to work out the calculations. One of these we will also present, for the benefit of all such inquirers:

"I have an engine with a piston 5 inches in diameter and 20 inches stroke, how much steam must I carry to make it work up to six-horse power?"

The rule is (though not to be found in books) multiply the area of piston in square inches by a stipulated velocity of piston, and use the quotient as a divisor to divide the sum total of horse power which the engine is desired to work up to. Thus: Area of the above piston in inches $5 \times 7854 = 19{\cdot}6350 \times 300$ (velocity of piston in feet per minute) $= 5890{\cdot}5000$. The sum of six-horse power is $33{,}000 \times 6 = 198{,}000 \div 5890{\cdot}5000 = 33{\cdot}44$, or thirty-three and a half pounds nearly of steam pressure on each square inch of piston. The velocity of 300 feet per minute is high, but the rule is equally applicable to any assumed velocity. This speed of piston for an engine of 20 inch stroke, is equal to 90 revolutions of the crank shaft per minute. We would never run such a short stroke engine faster than 200 feet per minute. The velocity of piston should vary with the length of stroke —increasing as the stroke is lengthened. The old rule used to be 160 feet per minute piston velocity, for a 2 1-2 feet stroke; 228 feet for a 6 feet stroke, and 256 for an 8 feet stroke.

The proper velocity for pistons is still a question of dispute among engineers. Scott Russell says "220 feet per minute is the velocity of piston generally reckoned in Great Britain, but it is a rule as groundless and injurious as it is universal. With large ports, valves, and condensers, double the speed may be employed." Such a speed he can see economically employed on our fast river boats, in opposition to Tredgold, who set up 250 feet velocity of piston per minute to be a law of nature. It is, indeed, difficult to construct engines of a short stroke to run at a high velocity because the diameter of the piston has to be reversed so frequently; still, our locomotives are standing evidences of what engineering skill and science can do for high speed in short stroke engines. A steamboat engine of ten feet stroke, making twenty revolutions per minute, involves a velocity of 400 feet of piston, while a locomotive of two feet stroke, and the same velocity of piston, must make 100 revolutions per minute; its piston will have to be reversed 200 times for every 40 times that of the steamboat's.

By adopting a certain pressure of steam as a unit, we can easily determine the velocity of piston required to work up to any amount of horse power. Thus for a piston of 12 inches diameter, and steam at 40 lbs. pressure on the square inch, it will require a piston velocity of 291 feet per minute to work up to 40-horse power $(33{,}000 \times 40) \div (12^2 \times 7854 \times 40.)$ The result we have given in round numbers. The area of a piston is obtained in these examples by squaring its diameter and multiplying by the decimal, ·7854. The same result can be obtained by another rule, viz.: multiplying half the circumference of piston by half its diameter.

Some persons speak and write respecting a steam engine as if its power lay in the cylinder, walking-beam, and fly wheel. It should never be forgotten that the fountain of a steam engine's power is its boiler, but we will leave the subject of "steam boilers" for another article. The foregoing calculations have reference to the average steam pressure in the cylinder during the whole length of the stroke, not the pressure in the boiler, which is always higher than that in the cylinder, especially when working the steam expansively, and no engineer in his senses uses it otherwise. In practice, an engine running at a high velocity will do more labor by cutting off the steam before the stroke is completed, than by using the full pressure during the whole length of stroke. Many may suppose this cannot be so, but the fact is otherwise, for in using high pressure steam in short stroke engines, during the entire length of stroke, by the frequent rapid reversion of the piston's motion, there is experienced a reactive pressure of steam on the exhaust end which gives to them a thumping action, an evil which can be obviated by working the steam expansively, and which thus both saves steam and economises the power.

Curious American Patent Case in France.

We learn from our valued cotemporary, the *English and American Intelligencer*, published in Paris, of a singular lawsuit which recently took place in France, respecting a French invention, for which application had been made for an American patent in 1844.

"A person, named Mondot de Lagorge, invented some years ago a species of vessel, called by him a 'nautical locomotive,' which he pretended could go from Havre to New York in 90 hours, and, though merely skimming on the waves, could brave the most violent winds without rolling or pitching. He took out patents for his invention in France and England, and determined to take out one for the United States also. Accordingly in May, 1844, he went before Mr. Lorenzo Draper, who was then the American Consul at Paris, executed the ordinary formalities, and deposited the necessary plans for obtaining one. Mr. Draper offered to cause his brother, who was in business in the United States, to do what was necessary to procure the patent; and M. Mondot de Lagorge gave him the sum of 1,630f., which it was calculated would be required for the expenses. Ten years passed away, and M. Mondot never got his patent. Thinking that this was owing to the negligence of Mr. Draper, he, in January last, brought an action against him before the Civil Tribunal of Havre, to obtain restoration of the 1,630f., and damages for his neglect. Mr. Draper represented that all he had done in the matter was in his Consular capacity, and that, therefore, he was not subject to the jurisdiction of a French court. But the Tribunal decided that the objection was not valid, and ordered the case to be gone into on its merits. On the 2d March, the affair came on, but Mr. Draper did not appear. The Tribunal, after hearing M. Mondot de Lagorge's statement, condemned Mr. Draper by default to restore the 1,630f., and said that he was liable to pay damages, but before fixing the amount, it required the plaintiff to give an estimate of them. Mr. Draper having taken no steps to have this judgment set aside, it, after a certain delay, became definitive. M. de Lagorge, in virtue of it, applied to the Tribunal to assess the damages. His calculation was, he said, that his 'nautical locomotive' would have produced a profit of 1,080,000f. for each of the fourteen years, during which the patent, if obtained, would have lasted. But as no 'nautical locomotive' had actually been constructed, and, as therefore his invention had not been brought to the test of experience, he was willing to set the damages at the moderate sum of 200,000f., which was less than one-fifth of one single year's estimated profits, and less than one-seventieth of the whole fourteen years' profits. Mr. Draper resisted the demand, on the ground that having acted gratuitously for M. de Lagorge, he could not be held responsible for any damages which that person might have sustained, and that it was even hard on him to have to repay he sum which had been advanced; that, besides, M. de Lagorge had not proved that he had sustained any damage, as his invention had never been anything more than a mere project; and, finally, that it was by that gentleman's neglect to do what was required, that he (Mr. Draper) had not taken out his patent. The tribunal, after examining all the circumstances, decided that Mr. Draper had been guilty of some slight neglect in the business, but that as he had acted gratuitously, and as, besides, it did not appear that the plaintiff could have sustained anything like the enormous loss he represented, no other person having appropriated his invention, he (Mr. Draper) should only pay 200f. damages and the costs."

On the Management of Circular Saws.

The subject of circular saws is one of particular interest to almost every portion of our country, especially in the South and West.—Reciprocating saws were at one time almost exclusively used in the preparing of lumber, but the obvious disadvantages arising from their intermittent motion, in spite of many improvements made on them, has led to their partial abandonment, and the substitution of circular saws in their place. The day cannot be far distant when (except for scroll work,) straight saws will be numbered among the things that were, for circular saws, possess many advantages over them, especially as it regards the greater speed at which they can be driven, and the greater quantity of work they can turn out in a given time—as much time is lost with the straight saws in getting ready to work.

The greatest difficulty experienced in managing circular saws lies in their tendency to heat. Wherever there is much friction experienced in one, it will get hot and expand, and in that condition will not make good lumber, and sometimes, indeed, it will buckle, and thus become materially injured. If the heating of a saw be uniform throughout, no further harm will result than its becoming "limber," and unable to sustain itself under a strong feed, but whenever it is reduced in temperature, it assumes its original form. It is very seldom, however, that the expansion of a circular saw, when heated, is uniform, as the friction is always greatest on the side next the log, owing to the plank yielding. Friction is caused by a too small kerf being cut out of the log, and also by the springing of the timber. In the latter case, when a line is cut, each portion of the log has a tendency to assume the form of an arc with the bark turned inwards; this presses that portion of the log between the head blocks against the saw, while at the same time the opposite side of the saw is entirely relieved, thus causing unequal friction and expansion.

In adjusting a circular saw to timber, the blade is not placed parallel to the log, but has what is termed "rake," that is, the cutting edge of the saw comes nearer the log than the opposite edge. This is done for the purpose of allowing the saw teeth to ascend without scratching the face of the log, and also to relieve the center of the saw where the tendency to heat is greatest. If, however, too much *rake* be given the saw, it will cause undue friction, and the inner side of the saw will heat and expand.

The arbor of the saw should be kept well lubricated, and not allowed to get hot, as it transfers the heat to the center of the saw.—Whenever the center of a circular saw becomes heated, it has a tendency to cup. The side of the saw which expands most by heat becomes convex, and if run too long, it will not return to its former shape when cooled, but will require hammering on the edge to straighten it. This is a job which requires considerable skill, and besides, few who use such saws have suitable anvils to straighten them upon. To such the following will be useful information:—Prepare a suitable number of annular papers with their inside diameter about one inch less than that of the hub, and place them on the shaft adjoining the concave side of the saw. Prepare a lot of similar papers with their inside diameter equal to that of the hole in the center of the saw, and their outside diameter about one inch greater, and place these on the saw shaft adjoining the convex side of the saw. A sufficient number of these being so placed in, they are tightened up in the hub, and the saw is brought up true in the face. Care must be exercised to put in no more papers than will straighten the saw. It is not, however, *absolutely* necessary to take the *cup* out of a saw until it becomes of a considerable size, for a saw will do good work even when cupped a quarter of an inch; the increased difficulty, however, of managing it in this condition, renders it advisable not to work it in such a state. In working cupped saws, the teeth should be made to fill a wider gauge on the convex than on the concave side; and if the tendency to heat at the center continues, it should have more rake, if cupped towards it. The teeth of a cupped saw in ascending, in all likelihood, will scratch either the face of the log or the plank. This is another and a sufficient reason to straighten it at once.

The edge of the saw is guided by a pair of rollers or wooden pins placed just below the log and near the front edge. Pins are preferable to rollers, for they do not pack a ring of sawdust on the saw when it passes between them, as rollers do. The proper position of these guides relative to the saw, varies under different circumstances, but in no case should both press against the saw at the same time, as they would be sure to heat it. When a saw heats on the edge, it is far more difficult to manage than if heated in the center, for a "cupped" saw still presents a straight line on the edge, while a buckled saw (one stretched on the edge) does not.

The edge of a saw may become heated on account of the teeth not being in proper shape. If any part of a tooth except the edge rubs on the log, the friction at that point will heat it. If sufficient depth of tooth is not preserved, there will not be sufficient room to free itself from sawdust, which will crowd in the kerf, causing undue friction on the sides of the teeth. If the saw cuts out of a true line, it will press hard against one of the guides, and thus also cause undue friction. It should never be forgotten that the heating of a circular saw, causing cupping or buckling, is always the result of undue friction; to avoid this, therefore, every effort should be exercised. A saw sometimes gets buckled from other causes than heating. Its roller guides are sometimes placed to bear too *hard* against it, and when this is the case the sawdust is pressed between them with a force sufficient to thrust the rollers out of place. Or if the rollers be so rigidly fixed as not to be moved by such a pressure, they tend to stretch the saw at the point where it passes between them. Gumming machines also tend to stretch the edge of the saw.

It is not necessary at all times to straighten a buckled saw on an anvil, especially if only a narrow ring near the edge of the saw is stretched, as it may be remedied by cutting through it, either by drilling a hole at the root of each tooth, or filing towards the center of the saw until the stretched part is cut through.

Water is sometimes used to cool a saw; it also enables a saw to work in a smaller kerf, thus saving power; and it also acts as a partial lubricator. It should be directed in jets on each side of the saw near the center. Its use, however, should be avoided in cold freezing weather. Allowing the saw shaft to play endwise, is one of the most effectual means of keeping the saw cool. When the timber springs against the saw, tending to heat it at the center, the end play of the shaft allows the center of the saw to yield; at the same time, the guide pins at its periphery keep it in line and the friction is therely reduced, and liability to heat diminished in a corresponding degree.

I have pointed out some difficulties experienced in operating large circular saws, and the manner of remedying and avoiding them, hoping that my experience may be the means of benefitting others. J. W. Garey.

Grenada, Miss.

Improved Hydrant.

The Corporation of New York is beginning to introduce larger sized hydrants, which have six or eight apertures, for the simultaneous supply of as many different streams of water to different fire engines. This is a capital improvement. Heretofore only one engine could be supplied from each hydrant, rendering the employment of long lines of hose pipe necessary to conduct the water from distant supplies. Of course the loss of time in coupling the hose and bringing the water, under such circumstances, is considerable, meanwhile the building burns.

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New Inventions.

The Trans-Atlantic Telegraph.

The steamship *James Adger* sailed from New York this week, for Newfoundland, to assist in laying down the first section of the submarine telegraph which is to connect this country with Europe. A large party of ladies and gentlemen were on board, among whom were Prof. Morse, inventor of the telegraph, Peter Cooper, and Cyrus W. Field, Esqrs., prominent projectors of this enterprise, and Lieut. Maury, and Professor Silliman. The duty assigned to this steamer is to take in tow the cable ship *Bryant*, and lead her across that portion of the Gulf of St. Lawrence which exists between Port au Basque, in Newfoundland, and Cape North—above Halifax—a distance of 74 miles. The cable was made in England and has but recently arrived out in the *Bryant*. It will be run out from her stern while in tow of the steamer. The cable is composed of three wires, and is only 1 1-2 inches in diameter. Weight of the whole, 400 tuns.

When these wires are laid the island of Newfoundland will be connected, telegraphically, with the American continent, and in the course of two years or less, the great inter-oceanic wires will be laid, and all Europe brought into instantaneous communication with this country. A land telegraph from St. John's, on the eastern shore of Newfoundland, to connect with the submarine cable at Port Basque, is nearly complete, so that in a few weeks the former city will be connected with New York. It is expected that all the ocean steamers will call at St. John's on their homeward passages, to leave news and despatches for transmission to the States, so that ere long our daily papers will be in the regular receipt of intelligence from London which has been but six days in transit. The distance from St. John's to Cork, Ireland, between which two points the ocean cable is to be laid, is only 1680 miles. It is pleasing to us, as it must be to every American, to think that this great project, the telegraphic union of the Eastern and Western Hemispheres, is about to be accomplished by a private company composed chiefly of American citizens. They have undertaken, and thus far carried out the enterprise with an energy and sagacity creditable in the highest degree to them and to their country. If Professor Morse is spared to us but a short time longer, he will have lived to girdle the whole earth with his magic wires.

Apple Paring Machine.

The accompanying engravings represent a very compact and simple machine for paring apples, and other fruit, &c., invented by J. D. Browne, of Cincinnati, Ohio, who has taken measures to secure a patent.

Fig. 1 is a perspective view of the machine, and fig. 2 is a horizontal section, showing the manner the paring knife is moved against the rotating fork which holds the apple. Similar letters indicate like parts.

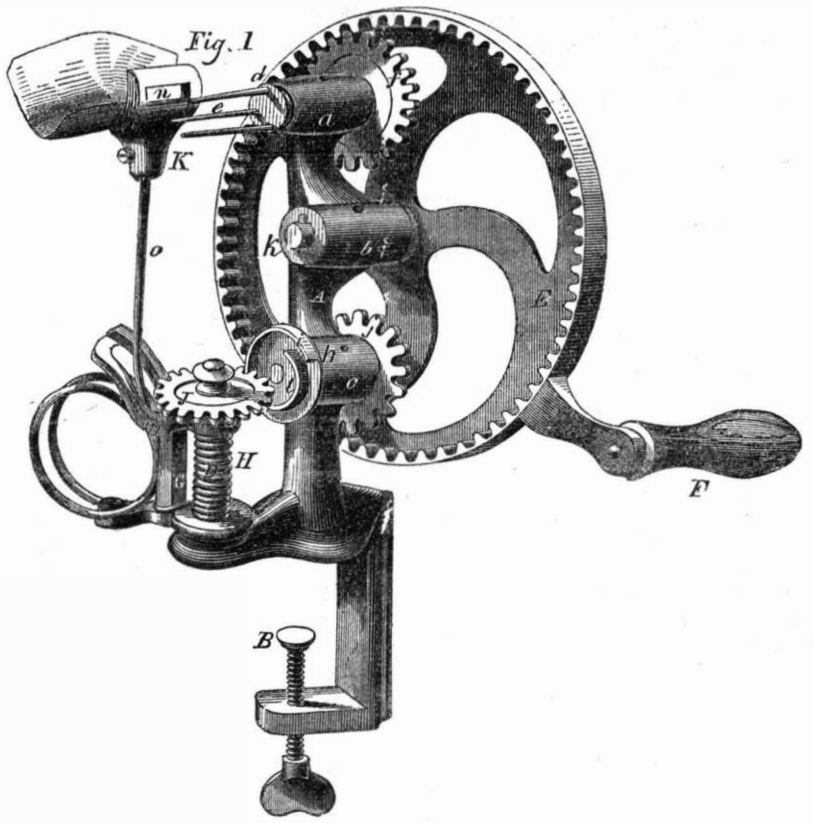
The machine is so small and compact, that it may be carried in a gentleman's coat pocket. Nearly all its parts are of cast iron. B is a thumb screw, which fastens it to the edge of a table by pressing the table leaf between it and the sole plate which supports the standard, A. E is the large wheel for giving motion to all the parts. This wheel has cogs, *d*, around its inner periphery. There are three small hubs, *a b c*, cast on standard A, which serve as bearings for the axis *k* of the large wheel, E, and those of the small planet wheels, *f j*. There is a fork, *e*, on the axis of wheel, *f*, and there is a worm, *i*, on the outer end of the axis of wheel, *j*. When the wheel, E, is rotated, it revolves the wheel, *f*, which rotates the fork, *e*, and also the wheel, *j*, which operates the worm, *i*, that takes into the teeth of the wheel, J, which moves the knife round against the apple on fork *e*. A small vertical standard, H, cast on the sole plate has a coiled spring, D, around it, and it also sustains the paring knife frame, G, which has a collar encircling standard, H, under wheel J, and another at the foot of the standard. One end of the wire spring D, is secured in a hole in the standard, H, and the other end is clasped around the foot of frame G. The paring knife has a head stock, K, secured on the upper end of a steel wire, O. The paring knife is secured with a screw on the under lip of mouth *n*. It is moved against the apple, and describes the section of an ellipse acting upon the apple which is rotated on fork *e* by pressing against its face from the heel to the eye, paring it as a turner's chisel operates in a lathe.

On the under side of wheel J, there are two projections, *l l*; as the wheel rotates, these catch upon a small shoulder on the upper end of G, and so carry round the knife frame and the knife. Unless, however, the wheel, J, was set eccentric to the standard, H, the knife frame would be carried entirely round by the worm, *i*, on the flange, *h*, of axis *g*, but when one catch, *l*, by the rotation of wheel J, is carried round to bring the apple to the end of the fork, the shoulder of the knife frame is thrown out of gear with the catch, *l*. and the knife frame flies back to its original position.

OPERATION—The apple is placed upon the fork, *e*, and the knife, in *n*, in consequence of the

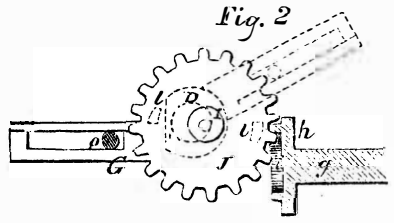
BROWNE'S APPLE PARING-MACHINE.

Fig. 1



spring, *o*, bears against it at the base of the fork. The wheel, E, is then turned by the handle, F, and the apple rotates. The wheel, *j*, al-

Fig. 2



so rotates, and one of its catches, *l*, presses against the shoulder, G, carrying round the frame, and its knife bearing against the apple until it reaches the outer end, when the catch, *l*, is relieved, and the knife flies back to its original position, ready to operate on another apple.

This apple paring machine can be manufactured at a very trifling cost, being made of cast malleable iron, and it is very neat and portable.

More information may be obtained by letter addressed to J. L. Havens, & Co., assignees, Cincinnati.

IMPROVED ICE PITCHER.

Fig. 1

Fig. 2

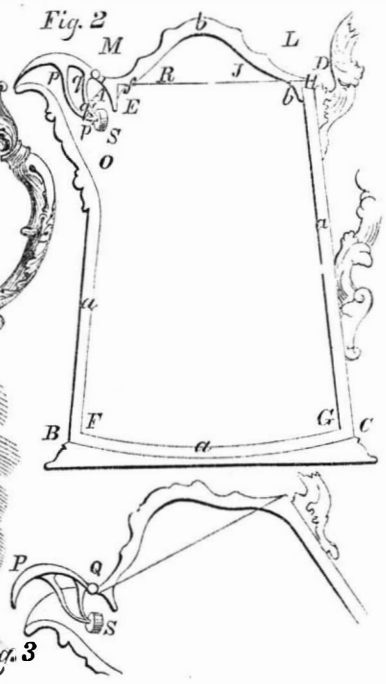


Fig. 3

The accompanying figures represent an improvement in Ice Pitchers, for which a patent was granted to Samuel Eakins, of Philadelphia, Pa., on the 26th of June last.

Figure 1 is a side elevation of the improved pitcher. Figure 2 is a vertical section of it; and figure 3 is a detached section of the spout.

The improvement consists in the arrange ment of the spout and its lid, the latter being made self-acting.

The pitcher has an outer case, A B C D, and an inner case, E F G H, with a space, *a a*, of about three-eighths of an inch between them, all round; this is filled with melted resin, or resin and plaster mixed together. The lid is made in the same way, and the space, *b*, is filled with a non-conducting substance in the same manner.

The main lid, J R L M, of the pitcher, is not hinged, but has a flange, *f*, extending down, which slides into the top of the pitcher, as shown in fig. 2; this effectually excludes the air at this point. O is the spout; P Q, fig. 3 is a small lid, covering the spout, and hinged to the outer shell of the pitcher at Q. From the lower side of this spout lid, two bent arms *p p'* and *q q'*, made of wire, proceed and form a lever in connection with the spout lid. A small piece of metal, S, is soldered to the extremity of the wires. The position of these arms and the weight is such, that when the pitcher is tipped over, the weight and lid assume the position in fig. 3, thus allowing the water to flow out; and when the pitcher is restored to its vertical position, the lid returns to its seat—as shown in fig. 2, closing the opening of the spout. It is very convenient sometimes to pour out water from an ice pitcher with one hand; the old plan of operating the lid to do this was by a chain attached to the lid and handle. The method of operating the lid, represented in these figures, is a great improvement over the old plan. The pitcher may be made of any suitable material.

More information may be obtained by letter addressed to the patentee at Philadelphia.

Laughing Gas.

This singular substance, discovered by Dr. Priestley, in 1776, was brought into particular notice by Sir Humphry Davy, the latter being the first to notice its stimulating properties. When taken into the lungs, it induces the most agreeable state of reverie or intoxication, frequently accompanied with physical as well as mental excitement, which lasts for a few minutes, and then subsides without any unpleasant consequences. Persons who breathe it feel an indescribable pleasure and happiness, so much so as to induce laughter, and hence the name (laughing gas) given to this substance, but which chemists call nitrous oxyd. Enough laughing gas may be prepared for a single experiment by heating two ounces of nitrate of ammonia in a retort, having a large ox-bladder attached to collect the gas. The process is, first to insert into the neck of the bladder a wooden pipe, or stop-cock, made of elder, with the pith pushed out; next moisten the bladder, and squeeze it up, to remove the air; then fix it to the retort containing the nitrate of ammonia. Now heat the salt with a spirit-lamp; it first liquifies, then boils and decomposes, producing water (which remains in the retort) and the gas (which passes into the bladder); when the bladder is full, the experiment can be performed. Hold the bladder in the *left* hand, placing the thumb over the pipe to retain the gas; with the *right* hand close the nostrils; then empty the lungs by a long expiration; after which, insert into the mouth the pipe attached to the bladder, and breathe the gas in the same manner as if it was air; in one or two minutes, if the experiment be successful, an elysian sensation will follow, more exquisite than can be described.—[Septimus Piesse.

Avoid Rashness in Swimming.

In youth every person should learn to swim, as a part of his or her education, as in many emergencies it may be the means of saving life. But we must caution good swimmers against being too rash in exposing themselves to needless danger. Many excellent swimmers have been drowned by overweening confidence in their aquatic abilities, and not a season passes away without some instance of this kind taking place. An old sailor once told us, that in his experience he never saw a smart man who was fond of displaying feats of agility, and risking his life needlessly, but lost it foolishly. The case of Sam Patch is an instance of this kind. In cases of danger it is a sublime sight to see a man risk his life to save that of another, but it is worse than vanity to see a man risking his life when no good object is to be subserved by doing so.

The Power of Belting.

Charles E. Moore, of Elizabeth Port, N. J., informs us by letter that he has had an experience of forty-two years in a cotton factory, and that there is no rule to determine the horse power employed in driving machinery by the size of belt. He gives it as his opinion, that belts are generally run at too low speed. "A belt 22 inches wide, running with a velocity of 1500 per minute, to drive 4000 spindles (half twist) with preparations, might have its place supplied advantageously by a belt 12 inches wide running at double the speed." He advises the use of large pulleys with open belts, and the slack on the upper side.

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Scientific American.

NEW-YORK, AUGUST, 11, 1855.

The Claims of Inventors.

To excel in anything requires devotion, genius, and enthusiasm. No class of men have displayed, in prosperity and adversity, higher degrees of these qualities than inventors. There are but few who do not appreciate the benefits which have been conferred upon society by modern inventions, and yet while this is true respecting improvements in themselves, it is no less true that the number of those who look from inventions up to their authors, is but small. The locomotive fleeting along its iron track, outstripping the deer in speed, and the behemoth in power, is the subject of admiration to all who gaze upon it, and it astonishes them to see means apparently so simple accomplishing such results. Little do they think, however, of the many heads that have planned, and the hundreds of hands that have toiled to bring it to its present state of perfection. The lathe which is now carving out the bust of an Empress in the Paris Exhibition, appears so simple in its construction and action, that but very few of the great host witnessing its operations will give a passing thought to its ingenious American inventor, who devoted years of study and patient toil to improve and perfect it. We might thus go on and specify an hundred machines, but time and space would fail us. Our object is to direct attention to the merits and claims of the authors of useful inventions—the improvers of the useful arts—for they are by no means sufficiently appreciated. Some talk of inventions as if they were easy things—mere lucky thoughts—costing nothing; others look upon inventors as men who have mere money-making objects in view in getting out patents and selling them. Inventors do have lucky thoughts, but they are generally the result of many sleepless nights' planning, and years of hard work experimenting. We honor every man who by diligence in business and honesty in dealing acquires a fortune, and surely no men deserve to be better rewarded for their efforts than inventors, for they are public benefactors. But with the most of them, we are positive, money is only a secondary object; there are exceptions, to be sure, but this is the rule. In conversation a short time since with an old inventor, who "has done the State some service" by his improvements, he stated that it often gave him pain to hear inventors spoken of as mere speculators. "The devotee," said he, "to scientific mechanical research, will spend the last dollar he can control to the God-ennobling end of practically demonstrating a favorite theoretical machine on which he has spent years of investigation. Our country owes more to inventors for its greatness than all other causes put together, aside from a religious and virtuous education." He spoke the honest truth.

Some seem to imagine that the study of mechanics and the investigation and construction of useful machinery belong to a lower order of society and of intellect, but this is a great mistake. Look where we will, at the rushing stream with its busy turning wheel, preparing food for the million, or to the whirling spindle and whisking shuttle preparing webs to clothe them, and ask "to whom are we indebted for these?" and the answer comes back, "inventors." Their genius is impressed upon every ship which sails the sea; the graceful bridge that spans "Niagara's waters dark and deep;" yea upon everything employed for ornament and use.

At the present moment there are hundreds of inventors engaged in inventing new machines and improving old ones. Every week a list of patent claims for new improvements is published in our columns, thus giving evidence of the many minds that are busily engaged in advancing science and art. These men are developing the resources of our country, adding to its material prosperity, promoting its interests, and elevating its character.—Amid the turmoil of business the public is liable to overlook their worth in the community. We therefore hope that as their patent claims are read each week in our columns, a feeling of gratitude and respect will arise for each, according to the merits of his invention.

The Mason Testimonial.

In accordance with the intimation given in our paper week before last, we herewith commence the publication of the names of the contributors to the "Mason Testimonial." These receipts are only up to the 3rd inst., when this sheet went to press.

Considering the very brief time which has elapsed since the subject was first broached, and the impossibility to have heard so soon from the more distant or rural districts, the subscriptions thus far received, though not amounting to much in the aggregate, are nevertheless very gratifying. They indicate the existence of a lively interest in the object, and leave us no room to doubt that the final result will be all that any one could wish.

Mr. Shugert, the Treasurer of the fund, in his letter enclosing the list, writes as follows:—"A large number of persons here (Washington) have offered contributions, and will pay them in at any time; but I have requested them not to do so, until the remittances from abroad would sufficiently indicate the success of the project proposed in the Scientific American, of complimenting Judge Mason."

We felt certain, from the beginning, that a handsome sum would be contributed in Washington, for there is probably no single locality in the country where Judge Mason has a more numerous host of warm and appreciative friends than in that city. When to their subscriptions are added those of the various officers and employees of the Patent Office, the sum total will already have swelled to a very respectable amount. We noticed that when the late Commissioner of Pensions, Mr. Waldo, retired from Office, the employees in that department, presented him with a very beautiful testimonial. Of course the Patent Office folks will not suffer themselves to be outdone under similar circumstances.

We would remind our readers that the ball is now fairly opened, and the opportunity is before them for testifying, in a delicate but enduring manner, their sense of the eminent services rendered to them, to inventors, and to the whole country, by an honest, faithful, and patriotic man—Charles Mason, of Iowa, late Commissioner of Patents. Such a token will form a way-mark in the history of the American Patent Office, the recollection of which will be alike gratifying to the recipient and to the authors.

By reference to the annexed list, it will be observed that contributors are not limited to any particular amount. Let no one hesitate on account of the smallness of their sums. The aggregate will count up faster than they are aware.

Subscriptions should be sent by mail directed to "S. T. Shugert, Esq., Acting-Commissioner of Patents, Washington, D. C.," who is the Treasurer of the Testimonial fund. Those of our subscribers who are about to renew their subscriptions to the Scientific American, may, for convenience, send money for the above fund to us, if they desire; we will duly forward all such amounts.

The names and residences of all contributors to the "Mason Testimonial," will be published in the Scientific American. To save trouble to the Treasurer, no other acknowledgment of moneys will be made.

SUBSCRIPTIONS TO THE "MASON TESTIMONIAL."

NAME.	RESIDENCE.	AMOUNT.
Andrew Inglis,	Philadelphia, Pa.,	$1,00
Chas. W. Felt,	Salem, Mass.,	1,00
Wm. Ballard,	New York,	3,00
Munn & Co.,	"	50,00
R. W. Fenwick,	"	3,00
H. T. Brown,	"	8,00
A. R. Haight,	"	5,00
R Boekelen,	"	2,00
R Macfarlane,	"	5,00
J. W. Coombs,	"	2,00
J. G. Mason,	"	1,00
Total received to Aug. 2, 1855,		$81,00

To Our Brethren of the Press and Others.

We would remind our editorial friends and others that the present volume of the Scientific American is drawing to a close, and we desire them to look at their files and see if any of its numbers are missing. If so we shall be happy to supply the wanting copies. We should be glad to receive early notice in every case, for after the volume is closed we shall not, probably, be able to supply odd numbers.

Patent Safe Game.

There are but few who have not read in the daily papers of persons coming from the country, to our city, being "taken in and done for" by what is called "the Patent Safe Game," and as no idea of what the game is can be obtained from the mere statement of the fact, we present the following illustration and description of it, in order to inform our people in the country fully of the matter, because cases are constantly transpiring of honest unsuspecting countrymen being fleeced by the very game of which they have heard so much. The sharpers who practice the "patent safe game" are keen fellows, and try to maintain an appearance the very reverse of rogues. Three confidants generally play the game, but two can do it. When they

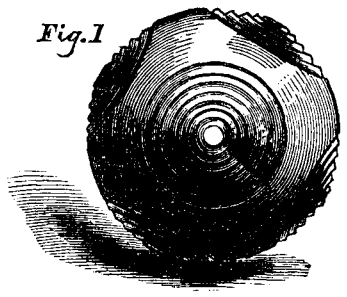
Fig. 1

see a person called by them a "Sucker," who appears to be a fit subject to play upon, they learn his name, and something about him, such as the place where he came from, &c. (they have various ways of doing this, one of which is by searching the hotel register,) one of them, who is called the "Roper," goes up to him, names him familiarly, and shakes him by the hand. This at first rather astonishes the stranger, but the "Roper" looks so innocent, and is so obliging and kind, that he soon disarms his suspicion, and gains his confidence. He then invites him to go and see the wonderful places about the city, and walks about until he arrives at a proper place, where Mr. "Roper," by looking down on the ground, discovers, accidentally, of course, a little neatly turned wooden ball, represented by fig. 1, which he picks up, and gazing upon it with a look of intense curiosity, he says meditatively to his dupe, "Well this is really a queer thing; I wonder what it can be used for," and pressing it all round, to his apparent surprise, out he pushes an interior plug, (B,) of A, fig. 2 (a section view.) With well assumed wonder he says, "Ah, what is this?" and pulls it out entirely, unscrewing its lid.—"A nice little box; well, now, this is ingenious; and it has something in it too." He then takes out a piece of white paper, (C,) shows

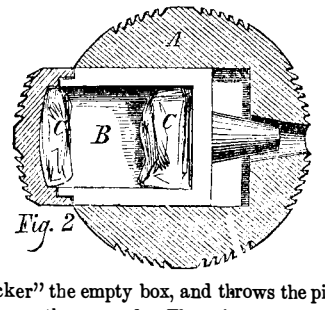

Fig. 2

"Sucker" the empty box, and throws the piece of paper on the ground. There is another piece of paper, (C,) in the small chamber at the other end of the plug, but "Sucker" does not see this, and the plug is put back in its place.

A man is now noticed coming towards them attentively examining the ground, with despair depicted on his countenance. He attracts the "Roper's" attention, who says to his dupe companion, "This man has lost something valuable, let us put some questions to him."

"You appear to be troubled in mind, sir; have you lost anything?" "Yes, sir, I have lost something that I would not have parted with for ten thousand dollars. I had spent years in inventing a new safe for fires, which I know would save millions worth of property, and was on my way to Messrs. Holmes & Butler's, the safe makers, to get one made; but, alas! I have lost the model! It had the appearance of a small carved wooden ball; oh, sir what shall I do." "Roper" says feelingly and honest-like aside to "Sucker," "I can stand this no longer, it pains me to see him. Friend," says he to the afflicted safe loser, "I think I know where it is," and taking it out of his pocket, asks, "Is this your model safe." "It is, it is, thank you, thank you," exclaims the overjoyed Safe-man. "But how," says Roper, "can such a thing as that answer for a safe." "Oh, I put a prop under it, and when a fire takes place the support has but to be knocked away, and out it rolls down an incline into the street." "By all the powers," says "Roper," "that is a capital idea. I suppose you have it made to hold something." "Oh, yes, there is a box inside of it, and a paper in its chamber now."

"I don't believe that," says Roper (and aside to "Sucker" he whispers, "I'll bet him on that piece of paper.") "I'll bet there is no paper in it."

"How much will you bet. I'll put up $1000."

"I have not that much," (aside to "Sucker," "I'll take $100 from him,") "but I'll bet $100," and he takes out a number of bills, perhaps $50, and a bank check for other $50, and says to "Sucker" (for he has found out how much *he* has,) "will you loan me bills for this check until we get to my hotel?"

All this has been done so honest and fair-like, that "Sucker" pulls out his pocket book, gives accomplished "Roper" $50 in bills, and takes his check. Then the Safe-man presses on the conical end of the plug, (B,) takes it out, and from the other end pulls out the other piece of paper, (C.) The thing is done, and the Safe-man having fairly won the bet, marches off with the money. The "Roper" looks sad and crestfallen, but is soon relieved of his grief, for up comes a person assuming to be a policeman, charges them with gambling, and makes a grab at them. "Roper" shouts "run" to his companion, and takes to his heels, but poor "Sucker" is held by the officer, and denying the imputation of gambling, solicits to be let go. This the policeman allows when in his fright "Sucker" flies the city, and soon finds out that his check is worthless; that the Safe-man, Policeman, and "Roper," were colleagues, and he the dupe of the *patent safe game.*

Important to Inventors—Another $10,000 Prize.

More than a year ago we chronicled the liberal offer of $10,000 bona-fidely proposed to be paid by Mr. Moses S. Beach, proprietor of the New York *Sun*, for the patent right for an invention that could supersede hand labor in feeding blank sheets of paper into the printing press. We believe that offer still remains open, and the end in view unaccomplished.

We have now to record the offer of another prize of the same amount, for an entirely different invention. We subjoin the proposal as received by us:—

"Messrs. Editors—If you think proper, please give notice through the Scientific American that an invention is wanted that will saw two sides of a tapering slab for monuments, both at the same time. Whoever does this makes his fortune. I will give $10,000 for the patent right. M. M. Manly.

South Dorset, Vt., July 23, 1855.

[To save competitors unnecessary trouble, we hope they will carefully observe that Mr. Manly proposes to pay the sum named *after the patent is obtained*, and not sooner. Therefore none need bore him with letters announcing that they have made the desired discovery, and demanding the reward before ever they have even tested their alleged invention, or taken any steps to secure the patent right.

Personally we are unacquainted with Mr. Manly. We would state, however, that he is a member of the firm of Manly Brothers, who are, we understand, pretty extensively engaged in the marble business, and have a quarry of their own in Vermont. His offer appears to be a "manly" one, at any rate, and we have no doubt it will call out the desired improvement. The remark in the above letter that "whoever does this makes his fortune," we think is correct, prize or no prize. Let all those who have leisure moments to spend in thinking, remember these two noble prizes. They are open alike to the poor and the rich—to the unlearned and the lettered. In times past the best inventions have generally originated with the poor and uneducated. That it will be so in the future there can be little doubt, for now as ever, "Necessity is the mother of invention."

Rail Road trains will yet be running at the rate of 100 miles per hour; that is our opinion.

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Editorial Correspondence.—No. 10.

The Great French Exhibition.—The American Department.

PARIS, July 12, 1855.

It is estimated that there are now invested in manufacturing, in the United States, about six hundred millions of dollars, and that the annual value of the products reaches the enormous sum of one billion of dollars. We have large workshops and foundries scattered over the country,—cotton, woolen, paper, oil, leather, and silk manufactories, besides forty thousand mills employed in the lumber trade. The combined results of these immense interests throw into the shade the industrial exploits of any other nation within the same period. Yet it is not easy to convince a foreigner of this truth from the meager display that is made of our skill and ingenuity in this wonderful Paris Exhibition—and it now begins to appear that the manufacturers of the United States have committed a great blunder in not availing themselves of this open competition for the display of their products. I stated in one of my previous letters that they had no encouragement to come here, owing to the contiguous position of England, and of the advantages possessed by English manufacturers. I have thought very strange that the Canadas should have made an appropriation of $50,000 for the purpose of Exhibiting their products in France.

I now understand that the good results of this enterprise are beginning to be realized, and that orders for lumber, edged-tools, etc., are already on their way to Canada. France needs many things that can be imported from other countries having them in abundance, cheaper than they can be produced at home. In the article of building lumber, France is almost as poor as horses employed in the fish trade of New York. This remark is also true in regard to most of the more valuable minerals, and if the cotton and woolen manufacturers of France would consult their own interests, they would set aside some of their old machinery and adopt such as is displayed from the English workshops of John Platt & Son of Oldham, and I. Elce & Co., of Manchester. Their spinning and carding machinery cannot be excelled —but in regard to looms, I think those made in the United States are the best. I am sorry that we have not one of Reynold's or Scott's Looms to show in our department. With all that has been said of the figure we cut in this Congress of Ingenuity, we have really several contributions that do much credit to our country—as will be seen from the subjoined list of machines that have been illustrated in the SCIENTIFIC AMERICAN. In fact they comprise almost our entire show of machines.

We have Harraday's ingenious machine for cutting garments, furniture coverings, etc., etc.; H. W. Peaslee's excellent machine for washing and handling paper stock; Charles Starr's book-backing machine, improved and exhibited by Sanborn & Carter, of Portland, Maine; Halliday's wind-mill; Willard Day's submarine lamp; Wilson's, and Singer's sewing machines, actively in operation, to a staring multitude; Aatkin's curious raking machine, attached to reaper, by J. S. Wright, of Chicago; also, McCormick's and Manny's reapers, each of which have appeared in the "History of the Reaper." A machine for cutting metals, invented by S. P. Ruggles of Boston, Mass., is a very fine invention, and does our country much honor. It is faithfully attended by E. Richmond, who is the European proprietor, and with the true spirit of an enterprising Yankee, he shows his visitors how easy it is for such a machine to bite off the thickest plates of iron. It effects in an easy manner the rude operation of the blacksmith, who first cuts the enamel of the iron on each side, with his cold chisel, and then breaks the internal substance by a blow, over his anvil. The machine has a wheel that revolves with mathematical exactness, cutting the upper enamel of the plate by a rotatory drawing stroke. It is put in motion by a toothed rack, which causes it to traverse across the upper surface of the plate, whilst the pressure of this wheel upon the plate against the edge of a horrizontal fixed blade causes it to cut the lower enamel, and at the same instant produces a separation of the internal fibers of the iron, so that the plate is divided without the blades coming in contact with each other, nearer than half or two-thirds of an inch. The cutters can be elevated and depressed to suit any desired thickness of iron, by means of eccentric bolts. The cutting blades are nearly straight on their edges, and therefore if properly chilled they will not require sharpening. It requires very little power to operate the machine, and it cuts the heaviest boiler plate at the rate of 10 ft. per minute. It possesses another important advantage, viz: by the use of an adjustable plate holder it is capable of cutting circular lines, thus adapting it to the use of tin, copper and zinc workers. A small machine for this purpose is on exhibition, and I am pleased to learn that the business prospects of its exhibition are very encouraging. I consider it the best iron cutting machine in use.

F. & A. Walle, of Bethlehem, exhibit their ingenious machinery for making paper bags. The importance of such machines will be understood when the fact is known that about nine hundred millions of paper bags are annually consumed in the United States, for packing garden seeds, groceries, etc. Until the introduction of this machinery these bags were made by hand, at the rate of about 1000 per day; the machine is capable of supplying 15,000 per day. It performs the several operations of cutting, folding, pasting, and printing the bag, and by means of a chamber at one end, into which the bags are carried by a series of belts, they are brought into contact with a current of air, and rapidly dried, and are thus delivered for use. The printing is done by the aid of a type cylinder, revolving suitably with the velocity of the bag to be operated upon, and inked by rollers. A machine to do all this is necessarily made up of many parts, requiring several changes of motion, and without illustrations it is difficult to present a clear idea of its operation. The machinery in operation attracts a good deal of attention.

J. A. Reed, of New York, exhibits a very beautiful improvement in oscillating steam engines. For simplicity and effectiveness, I think it is the best engine in the building. This is saying a good deal, considering that there are about 100 steam engines on exhibition. The exhibitor is, I believe, finding a great demand for his engines, and has already sold his stock on exhibition, consisting of three engines of 1, 3, and 15 horse. The peculiar features of this engine consist in admitting the steam into both sides of the cylinder at the same time, by its oscillating movement. By this means the steam pressure upon the cylinder is equalized or balanced. The advantages of the improvement are, that it enables the steam ports to be constructed much larger than the ordinary size, and allow a larger area for the steam to pass freely, and to exert its full power at once. The steam is admitted at the end of the cylinder, and acts at once upon the piston head. Mr. Reed also exhibits an improvement in steam pumping engines, which consists in arranging the valves upon a rod in such a manner as to balance the steam pressure, which enables the engine to be worked as in the case of a steam pump or saw, without the necessity of a balance wheel. If we are ever to have steam fire engines, and steam plows for our western prairies, I think we must depend upon these simple engines of Mr. Reed, as they are the very essence of simplicity.

Thomas Blanchard of Boston, has on exhibition two of his wonderful machines for carving —a small machine is now at work carving medallions upon ivory. It finishes them at the rate of one every twenty minutes, with hand power.

In dentistry we have seen some very superior specimens exhibited by Dr. N. W. Kingsley, of New York. The *mounting* is especially good. The artificial teeth of J. A. Ross of New York, now residing in Paris, are not excelled by any.

Wethereds, of Baltimore, exhibit a large sized machine of their system of surcharging steam —which has also been illustrated in the SCIENTIFIC AMERICAN.

A large machine, intended for carving busts of the size of life, is now waiting for the pattern of a bust of the Empress. The exhibitor intends to show the French people that he can produce a perfect bust, without the aid of the artist's chisel. It is certainly a very curious and ingenious invention, worthy of the inventor's fame. Among the other contributions which do credit to our country are, the series of Wind and Current Charts of Lieut. Maury. Specimens of bank note engraving by Rawdon, Wright & Co., of New York; a pair of weighing balances presented to France by the United States, through Alexander Vattemare, which are pronounced by Mr. Silbemann, Director of the Conservatoire of Arts, as the most perfect in the world; also very beautiful specimens of daguerreotypes by Gurney and Meade of New York. There are other articles of merit from our country, which I have not space to enumerate. I will however mention the grain separator and horse power of J. A. Pitts, of Buffalo —undoubtedly the finest machines for the purpose in the exhibition. We are creditably represented by a small but decidedly useful group of articles, and if the American exhibitors do not receive medals and honorable mention, it will be because they do not attend to representing their articles—a defect that sadly exists, I am sorry to say. It is impossible for the Commissioners to answer such inquiries as the juries are instituting. S. H. W.

P. S. Owing to the difficulty in getting the steam through the long series of copper pipes that have been used for that purpose, the Imperial Commission has ordered iron pipes to be substituted, as iron does not condense steam as rapidly as copper. This delays the machinery exhibition, and I shall be obliged to leave Paris without much time to see it all in operation.

Recent Foreign Inventions.

IRON MANUFACTURE.—Mr. J. Boydell, of Anchor Iron-works, Smethwick, England, has patented an improvement in the beds of reverberatory furnaces used for puddling iron. This invention relates to the employment of the refuse product of pyrites, principally composed of iron, in making the beds of reverberatory furnaces used for puddling iron. In the burning of iron pyrites, when manufacturing sulphuric acid or sulphur therefrom, the residual matters resulting (consisting of oxydes of iron, combined with more or less impurities) have heretofore been thrown away as refuse, and it is the application of this refuse matter in the puddling of iron which constitutes the present invention; and the process of puddling will, by such application, be rendered less expensive, by reason of the low cost of such refuse matters. The oxydes of iron obtained from pyrites in the manufactures above mentioned differ in quality, some being mixed with considerable quantities of quartz or silex, whilst others retain quantities of sulphur; those possessed of either of these matters to any very great extent, should be rejected. Those lumps which present to the touch a soft and smooth surface, and are of a reddish purple in color, are the lumps which should be sorted out of the heaps for use in the puddling furnace; and those which present a hard, sharp, gritty, and cinder-like surface to the touch, in consequence of the silex present, should be rejected, as well as those which present white crystalline or quartz-like fracture, and those indicating the presence of sulphur. The lumps of the refuse matter having been sorted, those which have been selected for use are to be employed in the making of the beds of puddling furnaces, in like manner to that ordinarily practiced when using oxyd ores of iron; the refuse oxydes from pyrites being used either alone or in combination with the oxydes of iron heretofore employed. The patentee claims the application of the refuse products of iron contained in burning pyrites (for the manufacture of sulphuric acid and sulphur) in the making of the beds of reverberatory furnaces used for puddling iron.

IMPROVEMENTS IN FURNACES.—Mr. J. Biden of Gosport, England, has secured a patent for so constructing furnaces as to admit a supply of air to the sides and bottom of the ash-pit, in addition to the ordinary current. The furnace is made sufficiently long from front to back to admit of the incandescent fuel occupying the back half of the fire-bars, and the fresh or unburnt coal the front of the bars. The ash-pit is supplied with a sufficient quantity for complete combustion, by free admission in front. In addition to this, a supply is derived from outside the furnace, and conveyed by a tube under the ash-pit, in such manner as to impinge directly beneath the hinder part of the fuel, which is in a state of incandescence, pass by an opening between the fire-bars and the bridge, and then mix with any unconsumed products of combustion in the flues, and cause them to be completely consumed. In Cornish boilers, these air pipes are carried through the water space into the furnace, at the proper angle to deflect the air towards the back of the furnace. In marine engine furnaces, the air passes in front of a deflecting plate, which, while it causes the air to impinge directly under the hinder half of the fire-bars, keeps the air passages free from ashes.

More About Etherizing Congress.

On page 357 we presented a brief account of the efforts that had been made by Dr. Morton, to obtain a grant of $100,000 from Congress, for the discovery of etherization; and we also stated that the funds for operating on Congress had been provided by the late Treasurer of the Eastern Rail Road, Boston, whose defalcations are now well known. Since we published the remarks referred to, the Examining Committee of the Stockholders of the Eastern Rail Road, appointed on the case of Mr. Tuckerman, the Treasurer, have made their report, in which we find it stated that the whole of the embezzlement amounts to $245,203, or nearly a quarter of a million abstracted from the assets of the Company. It states, however, that he has given up a number of claims and rights to the Company, for its benefit. Connected with one of those claims are appended the following remarks:—"An investment of a kind and character, which, we are advised by the Counsel of the Corporation, cannot be disclosed even to us, without prejudice to the interests of the Company, and from which, we are assured, and have reason to believe, the Company may yet derive great benefit, involved, as Mr. Tuckerman declares, an original expenditure of $50,000."

This, we understand, is the claim for expenses in etherizing Congress, and from the somewhat mysterious language of the Report, we would infer that hopes are still entertained of getting the Congressional grant of $100,000. We think, the Company may give up all expectation of obtaining this snug little sum. We really hope the stockholders will not be deceived into any measure for advancing funds to obtain any of that which they have lost through their Treasurer, in etherizing Congress. We cannot conceive how they can ever obtain any of the Congressional grant, except by the collusion of interested parties; and they may depend upon it, that the public and the press will keep a sharp look out upon all their proceedings in relation to this matter.

The Contract System on the Canals.

During the past winter Wm. J. McAlpine, Esq., late State Engineer, and other associates made a proposition to the Senate, to keep the Canals of the State in repair for $700,000, per annum, $432,000 less than the cost of repairs for the previous year. This general proposition was not accepted, but a partial trial of the system has been made on section No. 1, of the Erie Canal. This section—18 miles long—has now been under trial since the opening of the Canal this season, under responsible contractors, and has been found to operate in the most satisfactory manner. The repairing for this section during each of the previous three years, cost $100,000, and the contract was taken to keep it in repair for five years for $43,000, per annum—saving to the State $57,000 each year. This section has been kept in better condition, and boats have experienced less delay and trouble in passing the Locks than during any former year.

The following is an extract from a recent Report of the State Canal Board, on the contract system, and shows what its members think of it:

"The continually increasing cost of the canal repairs admonishes us that this lavish expenditure must be arrested, and greater economy exercised in their management, or their revenues will be soon entirely swept away.

The results of the experiment of letting the repairs by contract, are thus far of the most encouraging character, and affords strong grounds of hope and belief that it will ultimately be found to be the only system under which the canals of our State can be made productive of revenue."

Turnips may still be sown in the middle of this month, and produce a good crop before winter. Late turnips are often the best.

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TO CORRESPONDENTS.

J. H., of C. W.—The word to which you refer in your letter, appeared to be as it was printed. Telegraph wires were laid in glass tubes in England, and often went wrong.

J. B., of Texas—Hollow bars for furnaces, with water circulating through them, are old. They were never found to work well. Your devices for ascending inclines on railroads and for keeping cars on the track, are not new.

T. McG., Jr.—Your rotary pump is an old device and is not patentable. Walker's patent Horological Cradle—which is moved by clock-work, the cradle acting as a pendulum,—is sold hereabouts in large numbers.

O. W. B., of N. Y.—Your Hydraulic, Pneumatic, Hydrostatic Pressure Perpetual Motion Machine, is quite as likely to operate successfully as any other plan for the same purpose, that we know of. "If it will work," you think it would be a new motor. That little word "if" has blocked the wheels of all perpetual motions so far, and we fear will always continue to do so. But you can very easily test the success of your plan: get into a basket and carry yourself along for a spell without touching ground. Your success in this feat will demonstrate the practicability of your present invention. When you send on a working model, be particular to forward your daguerreotype, to be placed in the gallery of illustrious inventors.

S. H. W., of O.—Your balance valve is quite old, but the governor is new to us, and we think a patent could be obtained. The valve and governor could not both have been covered by one patent, had both been new. A valve will require to be shown in the model to explain the operation of the governor.

H. W., of Wis.—We have received your Letters Patent, and will proceed at once towards preparing the engraving, which will be inserted in the paper in their turn.

J. R., M. D., of O.—Your specification for a caveat was duly received, with $23, and the papers have been forwarded to the Patent Office. Your name we have entered upon our subscription books for one year. We know of no plan for shortening wagon tires without cutting and re-welding them.

D. W. P., of N.Y.—We have reason to think that a patent on your application for the improvement in denta chairs will be issued next week.

H. P. and J. P., of Ill.—We think there is a chance for a patent on your hinge machine. Send government fee of $30 with model.

C. R. A., of N. Y.—There is nothing patentable in your invention unless it be in some comparatively unimportant details. An instrument of the same character was patented many years ago. We should think the patent must have expired by this time. The arrangement of the bells was substantially like yours.

F. T., of R. I.—Your method of arranging stories, published in newspapers, is as old as the hills. Foreign papers have long adopted the plan, so that when the tale was complete you would have a book ready for binding.

H. B. T., of Ct.—There is nothing patentable in beveling doors and drawers, as you propose, to obviate swelling in damp weather. You say it is only the front boards of drawers that swell. Our experience does not confirm this. We find that other portions are affected in the same way.

C. L. L., of Mass.—By paying $500 you could apply immediately for a patent. Beyond this the law offers you no security save your own secrecy, until your year of residence has come around.

J. L. P., of N. Y.—Hollow axles and shafts of wrought and cast iron are not new or patentable. $1 received.

E. N., of Mass.—We can send you only two of the numbers you ask for, viz., numbers 4 and 19, Vol. 9.—We cannot inform you where you can get the information you desire. Perhaps if you would address a letter to Mr. Catgreave, and enclose it to the Editor of the *London Farmer's Magazine*, stating the circumstances, he would forward the same.

M. G., of N. Y.—You cannot obtain a perpetual motion by arranging the magnets as you propose. An electro magnetic machine, will give out no more power than that impressed upon it by turning the crank. The friction of the piston in a coiled magnet, is of no consequence.

H. S., of Ohio.—Yours will receive attention.

G. P., of Pa.—Yours about preserving fruit will receive attention next week.

J. W., of Maine.—There is no well known process, as you state, of bleaching liquids by galvanic composition, and if there was, you could not obtain a patent by merely applying it to manufacturing purposes on a large scale. You cannot decompose a solution of common salt by galvanism, and make it give out free chlorine.

J. B., J., of Tenn.—The error to which you refer was a typographical one, and of no importance.

T. D., Jr., of Pa.—The caveat will serve as a proof of priority of invention. Should any other person apply for a patent while your caveat exists at the Patent Office, you will receive official notice, and will have three months to prepare an application for patent. Unless the other applicants can prove the date of their invention further back than your caveat, you will receive the patent, and they a rejection. The caveat secures no right.

W. J., of Mass.—We do not know of any apparatus precisely like yours, though we have seen some bearing a resemblance. There is probably novelty enough to entitle you to a patent. We think it would work very well. It is very simple. Send us the patent fee of $30, when you desire to apply for a patent.

M. P. M.—Your boot pegging apparatus as near as we can judge, is constructed on the same principle as that patented by Samuel Preston, of Danvers, Mass., more than 20 years ago.

W. W., of N. J.—It is an old saw, you know, that says "He that is his own lawyer has a fool for a client." Your friend has experienced the truth of this. Had his papers been properly prepared in the first place, he would have had his patent long ago. The best course now will be to withdraw the case and have an entirely new application made. Send a new model.

D. B., of Pa.—A caveator is not entitled to a notice from the Department, if an application for a patent has been made before the caveat was filed, even if the case has not been acted on.

C. L. K., of N. Y.—For the list of premiums which we awarded Jan. 1, 1855, see our paper No. 17, present volume. For those awarded the previous year, see page 133, vol. ix. You can very easily take a prize next time, if you desire.

C. C. P., of Mass.—There is a small work named, the "Turner's Companion," published by H. C. Baird, Phila. It is such a one as you want, exactly.

Jonathan Pickle, of Buffalo, N. Y.—When you learn to be honest and search for the truth, you will find out that you have been mistaken.

R. S., of N. Y.—Patents are not now granted for the mere manufacture of an article out of a material not before employed for that purpose. Years ago such patents were issued. For example, Stephen Rest, of Manlius, N.Y., obtained a patent in 1833, for a fluted copper wash board, made in all respects like the common wooden ones; the only difference being in the material. Such a grant could not now be had. Had the Commissioner properly understood the law at that time, it would not have been granted. Where both the form and the material are old, there is, certainly, no invention. It is only for inventions that our patent laws are intended.

C. R. L., of Pa.—We can send you a copy of the claim of any patent granted since 1828, on receipt of $1. If you hear of an agent of Woodworth's Planing Machine drumming the members of Congress elect, in your district, for aid in the approaching Congress, please to let us know.

B. J. S., of Pa.—Curving river dams, or arching them up stream, so as better to resist the pressure of water, was suggested by Oliver Evans, the engineer, many years ago.

T. P., of N. Y.—An invention is much needed for defending our harbors from the approach of hostile fleets. The Russian infernal machine will be more fully described hereafter in our columns. It seems to be lacking in effect, for the British fleet have taken up forty of them off Cronstadt; although they were professedly sunk out of reach, under water. A good invention for this purpose would be worth a fortune.

T. A., of Tenn.—Stephen Kendall obtained a patent April 3, 1849, for a punching Machine, and Adoniram Kendall, for a Shingle Machine, in November, 1854. We find no patent for a power.

C. M., of Va.—Under the American patent laws foreigners cannot file caveats. If a subject of Great Britain pays the full fee, $500, and is subsequently rejected, two-thirds of the sum paid is returned to him. The charge for recording an assignment is $2, if not over 1000 words.

L. O. U., of N. Y.—In No. 47, present volume, we chronicled the grant of a patent to Mr. J. C. House, of Louisville, Ky., for a tilting bedstead, so connected with clock work that at a given hour the sleeper would be tumbled out of bed, *sans ceremonie*. You have, therefore, been anticipated. For lazy people and morning yawners, the above patent will be very applicable.

J. M. D., of Me.—There is nothing patentable in your fire alarm. Mr. J. S. Richardson, of New Hampshire, several years ago invented the same device, of which the following is a description:—The alarm part resembles that attached to clocks, having a weight to it, which, in its descent, will cause a bell to ring. A latch prevents the running down of the weight, and a string connected to the latch is led over pulleys, and, like bell wires, around the apartments where fires may be likely to happen; when this spring is burnt off a small weight is thereby liberated, which lifts the latch, and the alarm is sounded.

N. N. C., of N. H.—We think your invention is patentable. Judge Story has already settled this question, by a decision, as follows:—"Where the plaintiff claimed, as his invention, 'the construction and use of an endless apron, divided into troughs and cells, in a machine for cleaning grain, operating substantially in the way described,' it was held, that the claim was for a combination of the endless apron with the machine for cleaning grain; and that, if the combination were new, it was patentable, although a part of the apparatus were old."

Money received at the SCIENTIFIC AMERICAN Office on account of Patent Office business for the week ending Friday, Aug. 3, 1855:—

T. B. M., of Mass., $27; W. M., of Mass., $30; J. S. B., of O., $30; H. & R. S., of Ga., $30; T. H., of O., $30; J. B., of Ill., $30; C. W. S., of Mass., $30; A. K., of Ct., $30; C. W., of N. Y., $350; L. K., of N. Y., $30; J. L. T., of N. Y., $30; J. A. W., of Ark., $28; E. B. G., of Ct., $30; E. R. B., of Ct., $25; E. P., of Ct., $55; J. W., of N. J., $30; T. D., of Ala., $55; W. F. F., of Me., $15; C. & G. S., of Mass., $25; J. B., of Ala., $25; G. B. A., of Ct., $25; R. H., of Mass., $25; A. B. G., of Ct., $30; J. W., of N. Y., $20; J. T., of Pa., $30; O. W. M., of Ct., $55; J. H., of O., $30; E. G., of Mass., $30; A. S. B., of Me., $35; J. W. B., of Ark., $10; A. C. K., of N. Y., $30; D. T., of N. Y., $40; W. W. B., of N. Y., $25.

Specifications and drawings belonging to parties with the following initials have been forwarded to the Patent Office during the week ending Friday, Aug. 3:—

J. E., of Ms.,; W. W. B., of N. Y.,; H. N. B., of Ill.,; G. B. A., of Ct.,; J. A. W., of Ark.,; J. B., of Ala.,; C. & G. S., of Ms.,; A. B. G., of Ct.,; R. K., of Mass,; D. T., of N. Y., (2 cases); W. W. Van L., of N, Y.

Important Items.

BACK NUMBERS AND VOLUMES—We have the following numbers and volumes of the SCIENTIFIC AMERICAN, which we can supply at the annexed prices:—Of Volume 5, 40 numbers, bound, $1,75. Of Volume 6, all,—price in sheets, $2; bound, $2,75. Of Volume 8, none complete, but about 30 numbers in sheets, which will be sold at 50 cents per set. Of Volume 9, bound, $2,75. Of Volume 10, all except Nos. 17, 25, 26, 27, and 28, at the subscription price.

PATENT CLAIMS—Persons desiring the claim of any invention which has been patented within fourteen years, can obtain a copy by addressing a letter to this office, stating the name of the patentee, and enclosing $1 for fees for copying.

RECEIPTS—When money is paid at the office for subscription, a receipt for it will always be given; but when subscribers remit their money by mail, they may consider the arrival of the first paper a bona fide acknowledgment of the receipt of their funds.

MODELS—We are receiving almost daily, models of inventions which have not the names of their inventors marked upon them. This usually prevents us from taking any notice of them whatever. We shall esteem it a great favor if inventors will always attach their names to such models as they send us. It will save us much trouble, and sometimes prevent the model from being mislaid.

PATENT LAWS AND GUIDE TO INVENTORS.—Congress having adjourned without enacting any new laws pertaining to applications for patents, we have issued a new edition of the old laws, which may be had at our counter or sent by mail. This pamphlet contains not only the laws but all information touching the rules and regulations of the Patent Office. Price 12 1-2 cents per copy.

Terms of Advertising.

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☞ All advertisements must be paid for before inserting.

IMPORTANT TO INVENTORS.

THE UNDERSIGNED having had TEN years' practical experience in soliciting PATENTS in this and foreign countries, beg to give notice that they continue to offer their services to all who may desire to secure Patents at home or abroad.

Over *three thousand* Letters Patent have been issued, whose papers were prepared at this Office, and on an average *fifteen*, or *one-third* of all the Patents issued each week, are on cases which are prepared at our Agency.

An able corps of Engineers, Examiners, Draughtsmen, and Specification writers are in constant employment, which renders us able to prepare applications on the shortest notice, while the experience of a long practice, and facilities which few others possess, we are able to give the most correct counsels to inventors in regard to the patentability of inventions placed before us for examination.

Private consultations respecting the patentability of inventions are held free of charge, with inventors, at our office, from 9 A. M., until 4 P. M. Parties residing at a distance are informed that it is generally unnecessary for them to incur the expense of attending in person, as all the steps necessary to secure a patent can be arranged by letter. A rough sketch and description of the improvement should be first forwarded, which we will examine and give an opinion as to patentability, without charge. Models and fees can be sent with safety from any part of the country by express. In this respect New York is more accessible than any other city in our country.

Circulars of information will be sent free of postage to any one wishing to learn the preliminary steps towards making an application.

In addition to the advantages which the long experience and great success of our firm in obtaining patents present to inventors, they are informed that all inventions patented through our establishment, are noticed, *at the proper time*, in the SCIENTIFIC AMERICAN. This paper is read by not less than 100,000 persons every week, and enjoys a very wide spread and substantial influence.

Most of the patents obtained by Americans in foreign countries are secured through us; while it is well known that a very large proportion of all the patents applied for in the U. S., go through our agency.

MUNN & CO.

American and Foreign Patent Attornies, 128 Fulton street, New York; 32 Essex Strand, London; 29 Boulevard St. Martin, Paris; 6 Rue D'Or, Brussels.

GRAIN MILLS—EDWARD HARRISON, of New Haven, Conn., has on hand for sale, and is constantly manufacturing to order, a great variety of his approved Flour and Grain Mills, including Bolting Machinery, Elevators, complete with Mills ready for use. Orders addressed as above to the patentee, who is the exclusive manufacturer, will be supplied with the latest improvements. Cut sent to applications, and all mills warranted to give satisfaction. 48 tf

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SUPERIOR MACHINISTS' TOOLS—CARPENTER & PLASS, foot of 30th st, East river, N. York, are now building, and have constantly on hand, Lathes, Drillers, Planing Machines, Slotting Machines, Bolt Cutters, Gear Cutters, Surfacing Machines, or will make to order any other tools of any capacity required. The above Tools combine all the latest improvements, and the best workmanship. 48 2*

SUPERIOR EXCAVATING MACHINES—Are built at Pruyn & Lansing's Iron Works, Albany, N. Y., suited to the improvement of rivers and harbors, making canals, and grading roads. The subscriber's improvements recently patented, and his long experience, enables him to excel in all kinds of excavation, under any and all circumstances, both below and above water. It is only necessary for him to know what is required in the way of Excavation, to enable him to produce a machine in which the most perfect economy and convenience are combined, to accomplish the object with the greatest facility and the least possible expense. For an official statement of the performance of one of his river and harbor machines, built for the U. S. Government, see No. 39, Vol. 10, of the Scientific American.
47 2* D. S. HOWARD.

CAPITALISTS WANTED TO TAKE PATents Abroad—Mr. L. G. Evans of Spring Hill, Ala., has just taken a valuable patent in this country for an improvement in plows, and desires to find some person who will, for an equal share of the invention in England or any other foreign country, pay the fees necessary to take the Patent. The cost would be about $350 for England, $150 for France, etc. For particulars address L. G. EVANS, Spring Hill Post Office, Ala. 47 3*

TO MANUFACTURERS—THE AMERICAN Water Wheel Co., Wareham, Mass., are now manufacturing to order, Warren's Turbine Water Wheels, from new and improved patterns, got up expressly for manufacturers. These turbines are made in the most perfect manner, and on the most scientific principles. Cotton and woolen manufacturers will do well to examine them before purchasing elsewhere. We also manufacture a cheap turbine on nearly the same plans, but with less finish and less cost. They are well adapted to grist mills and small manufacturing establishments.
J. WARREN, Agent.
47 4 A. WARREN, Treas.

STATIONARY STEAM ENGINES FOR SALE—Horizontal Engines with iron bed frames, and Judson's Patent Valves, good, strong, substantial, plain finished, that will do good service, say from 4 horse power, $215, to 30 horse power, $1,037. Pumps, Boilers, and fixtures can also be supplied when needed. Address
28e3wtf S. C. HILLS, 12 Platt st,, New York.

ENGINEERING.—The undersigned is prepared to furnish specifications, estimates, plans in general or detail of steamships, steamboats, propellers, high and low pressure engines, boilers and machinery of every description, Broker in steam vessel, machinery, boilers, &c. General Agent for Ashcroft's Steam and Vacuum Gauges, Allen & Noyes' Metallic Self-adjusting Conical Packing, Faber's Water Guage, Sewell's Salinometers, Dudgeon's Hydraulic Lifting Press, Roebling's Patent Wire Rope for hoisting and steering purposes, etc.
CHARLES W. COPELAND,
43 eowtf Consulting Engineer, 64 Broadway.

MODEL'S FOR INVENTORS—All kind of new Clock and Watch work, also all kinds of difficult watch repairing, will be carefully executed by KONVALINKA, Watchmaker, 44 Bayard street, corner of Bowery, 3d floor. 1*

OIL—ENGINEERS, MACHINISTS, AND OTHers, will find in Weed & Co's. Transparent Oil an article free from gum, nearly fifty per cent cheaper, and much more durable than sperm oil. Also Cumberland Brothers' Patent Metallic Oil (the genuine article) manufactured and for sale by WEED & CO., No. 134 Pearl street, New York. 47 2*

A DRAUGHTSMAN WANTED—A good pattern maker, who understands drafting and designing stationary steam engines, mill work, &c., can find steady employment, if terms and references satisfactory, by addressing LIDDELL, KEPLER & CO., Erie, Pa.
47 2*

PATENT CORK CUTTING MACHINE—This machine is capable of cutting two corks of different sizes at once. For purchase of machines or State Rights, apply to JOHN POWER, at Mr. Holmes' No. 109 Blackstone street, Boston, Mass. 47 2*

UNITED STATES PATENT OFFICE,
Washington, July 12, 1855.

ON THE PETITION of Benj. Tatham of New York, and George N. Tatham, of Philadelphia, praying for the extension of a patent granted to them on the 11th day of October, 1841, for an improvement in machinery for making pipes or tubes of lead, tin, and other metallic substances, for seven years from the expiration of said patent, which takes place on the 11th day of October, 1855:

It is ordered that the said petition be heard at the Patent Office on Monday the 24th day of September, next, at 12 o'clock, M.; and all persons are notified to appear and show cause, if any they have, why said petition should not be granted.

Persons opposing the extension are required to file in the Patent Office their objections, specially set forth in writing, at least twenty days before the day of hearing; all testimony filed by either party to be used at the said hearing must be taken and transmitted in accordance with the rules of the office, which will be furnished on application.

The testimony in the case will be closed on the 14th day of Sept., 1855; depositions and other papers relied upon as testimony must be filed in the office on or before the morning of that day; the arguments, if any, within ten days thereafter.

Ordered, also, that this notice be published in the Union, Intelligencer, and Evening Star, Washington, D. C.; Pennsylvanian, Philadelphia, Penn.; Scientific American, New York; Daily Baltimore Republican, Courier, Buffalo, and Post, Boston, Mass., once a week for three successive weeks previous to the 24th day of September next, the day of hearing. S. T. SHUGERT,
Acting Commissioner of Patents.

P. S. Editors of the above papers will please copy and send their bills to the Patent Office, with a paper containing this notice. 46 3

NORCROSS ROTARY PLANING MACHINE.—The Supreme Court of the U. S., at the Term of 1853 and 1854, having decided that the patent granted to Nicholas G. Norcross, of date Feb, 12, 1850, for a Rotary Planing Machine for Planing Boards and Planks is not an infringement of the Woodworth Patent.

Rights to use the N. G. Norcross's patented machine can be purchased on application to N. G. NORCROSS,
208 Broadway, New York.
Office for sale of rights at 208 Broadway, New York. Boston, 27 State street, and Lowell, Mass, 42 6m*

THE EUROPEAN MINING JOURNAL, RAILway and Commercial Gazette. A weekly newspaper, forming a complete history of the Commercial and Scientific Progress of Mines and Railways, and a carefully collated Synopsis, with numerous Illustrations, of all New Inventions and Improvements in Mechanics and Civil Engineering. Office 26 Fleet street, London. Price $6,50 per annum. 36tf

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POWER PLANERS—Persons wanting Iron Planers of superior wormanship, and that always give satisfaction, are recommended to the New Haven Manufacturing Company, New Haven, Conn. 40tf

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LATHES, PLANERS, and all kinds of Machinists' Tools of the best description on hand and made to order by SHRIVER & BROS., Cumberland, Md., (on Baltimore and Ohio R. R., midway between Baltimore and the Ohio River.) 43tf

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ANDREWS & JESUP—Commission Merchants, Cotton and Woolen Machinery, Steam Engines, Machinists' Tools, Belting, &c., Importers and Dealers in Manufacturers' Articles; No 67 Pine street, N. Y. 23 1y

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MACHINISTS, TOOLS—Manufacturers, Mechanics and Railroad Supplies, Locomotive and Stationary Engines, Steam Boilers, Belting, Cotton and Woolen Machinery, Water Wheels; Pumps, Blowers, &c.
FOSTER & LEACH,
26 Broadway, N. Y., Selling Agents of the Lawrence Machine Shop. 36 13*

NEW HAVEN MFG. CO.—Machinists' Tools, Iron Planers, Engine and Hand Lathes, Drills, Bolt Cutters, Gear Cutters, Chucks, &c., on hand and finishing. These Tools are of superior quality, and are for sale low for cash or approved paper. For cuts giving full description and prices, address, "New Haven Manufacturing Co." New Haven, Conn. 40 tf

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MACHINISTS' TOOLS.—Meriden Machine Co. have on hand at their New York Office, 15 Gold street, a great variety of Machinists' Tools, Hand and Power Punching Presses, Forcing Pumps, Machine Belting, &c., all of the best quality. Factory West Meriden, Conn. 46 13*

HARRISON'S GRAIN MILLS—Latest Patent.—$1000 reward offered by the patentee for their equal. A supply constantly on hand. Liberal Commissions paid to agents. For further information address New England Manufacturing Co., New Haven, Conn., or to S. C. HILLS, our agent, 12 Platt street, New York. 13tf

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A. B. ELY, Counsellor at Law, 52 Washington street, Boston, will give particular attention to Patent Cases. Refers to Messrs. Munn & Co., Scientific American. 16 1y*

VAIL'S CELEBRATED PORTABLE STEAM Engines and Saw Mills, Bogardus' Horsepowers, Smut Machines, Saw and Grist Mill irons and Gearing, Saw Gummers, Ratchet Drills, &c. Orders for light and heavy forging and castings executed with dispatch.
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ONE THOUSAND YOUNG MEN of small means can make over 100 per cent., in a new, respectable and easy business in universal demand. Apply (enclosing stamps) to COOK & CO., Detroit, Michigan. 48 2*

FOR SALE—A PORTABLE STEAM Hoisting and Pumping Engine—Suitable for loading and discharging cargoes, raising stone for buildings, steeples, &c., also for pile driving. Will raise a hammer 20 hundred weight 60 feet in 30 seconds. By A. L. ARCHAMBAULT, Portable Engine Builder, 15th street, above Willow, Philadelphia. Portable Engines for driving portable saw mills made to order. Power from 5 to 30 horse. Orders filled in three to five weeks. 45 4*

TO RAILWAY CONTRACTORS—To be Let the clearing, grading, construction, furnishing, &c., of 200 to 300 miles of railway, at very remunerative prices. None need apply but principals, and those having ample command of capital, as part of the payment will have to be taken in stock, which should not be too hastily pressed on the market. Address Z. Y. X., Office of Scientific American, Fulton street, New York. 44 tf

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1855—WOODWORTH'S PATENT Planing, Tonguing and Grooving Machines—The subscriber is constantly manufacturing, and has now for sale the largest and best assortment of these unrivalled machines to be found in the United States. Prices from $85 to $1450. Rights for sale in all the unoccupied Towns in New York and Northern Pennsylvania, JOHN GIBSON, Planing Mills, Albany, N. Y. 43 10*

JACK SCREWS AND HYDRAULIC JACKS.—For sale at manufacturers' prices, by FOSTER & LEACH, 26 Broadway, N. Y. 37 13*

AMERICAN PLATE GLASS COMPANY—(Factory Williamsburgh L. I.) are now prepared to execute orders for rough Plate Glass, suitable for floors, skylights, vault, and deck lights. Prompt attention will be given to orders left at their office, 442 Broadway, or their agent, J. R. PLATT, 79 Murray st. 42 8*

THE WOODRUFF & BEACH IRON WORKS, of Hartford, Conn., L. B. HANKS Agent. No. 312 Broadway, New York. Will furnish to order high and low pressure, Marine and Stationary Steam Engines and Boilers. Also all kinds of machinery for Powder, Pale Sugar, and Flouring Mills, and every description Iron, Brass, and Composition Castings, Lathes, Shafting &c., of the best quality of materials and workmanship, liberal terms. 47

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Science and Art.

The Art of Dyeing.—No. 33.

Black on Woolen and Cotton Fabrics—In article 30, describing the process for dyeing a black on woolen goods, it is stated that sumac, except used in very minute quantities, imparts a rusty brown color to the fabric. On the other hand, it is stated in article 32 that a considerable quantity of sumac is positively necessary in dyeing a full black on cotton goods. It might, therefore, be inferred that it is impossible to color mixed fabrics of wool and cotton, such as muslin-de-laines, a good black, but this is not so. The following process for doing it, however, is not, so far as we know, described in any printed work. It consists simply in coloring the wool of the fabric a good black first, by the process described in the article referred to, then washing the goods, and steeping them for eight hours in a cold liquor of sumac; after which they are dyed by the process described in article 32, to color the cotton, only using weaker liquors, and the logwood not above blood heat. The last lime liquor may also be omitted, but the goods must be washed before they receive the logwood. It has been discovered that sumac only acts upon wool to injure its color when used at a high heat, such as is required in wool dyeing, but not when given cold, and the temperature of succeeding liquors kept correspondingly low. This explains the nature of the above combined processes for coloring such goods a good black. In many factories where cotton and wool waste are swept up and mixed together, and dyed previous to being carded, spun, and woven into cloth, much trouble has been experienced for want of knowledge like the above. Any other color can be dyed on such mixed fabrics by combining the two processes described in these articles for dyeing cotton and wool, always taking care to dye the goods by the woolen process first, and by the cotton one last. Woolen and silk mixed fabrics, and silk and cotton mixed fabrics, can all be colored by combining the separate processes described for dyeing each separately. Some colors, like olive green, may be dyed on woolen and cotton mixed goods at one dip, by the woolen process, and even woolen and silk mixed goods may be dyed a red with cochineal at one dip, but there are exceptions to the general rule.

Printed muslin-de-laine dresses of any color or pattern may be redyed and made a good black by following the above process; the only exception being those goods which are printed with a *resist paste*, such as *second mourning*, having white dots or stripes. Claret colors are very easily dyed on printed muslin-de-laines, covering up the whole print and making it one color—which of necessity must be full and dark.

Some dyers keep a tub of old sumac standing, for the purpose of dyeing such fabrics by the process described, imagining that they effect a saving thereby. This is a mistake on their part, for sumac liquor, especially in hot weather, soon ferments, and generates acid in excess, which both injures the goods and their colors (this hint may be useful to tanners, as from it the inference is natural that if the bark vat is allowed to ferment with skins in it, the action will be injurious to the quality of the leather.) Fresh sumac liquor, and no other, should be used in the art of dyeing.

The foregoing hints will no doubt be very useful to many of our manufacturers, as cotton is now somewhat extensively used in making the warps of cloth which pass current in the market for all wool.

Black wool, when of a deep rusty shade, by receiving too much logwood, can easily be reduced to a good color by a *weak sour*, but cotton cannot be treated in the same manner.—The effort of the dyer, therefore, must be rather to give a little less than too much stuff in dyeing the cotton of mixed fabrics. As the color on woolen goods is also more permanent, and more difficult to discharge than that on cotton, of course the latter cannot stand the fulling process so well.

To Dye Wood Black—Boil the wood in a strong liquor of logwood for half an hour, then take it out, and rub its surface with a piece of sponge which has been dipped into a solution of copperas. Gunsmiths dye their ramrods by steeping them in a strong solution of logwood for about twelve hours, then coating them with the copperas solution, an ounce of which is sufficient for five dozen. To boil them in strong ink would answer the same purpose.

To Color Ivory Black—Make up a very strong solution of logwood, a little fustic and copperas, and boil the ivory in this for twenty minutes, then take out the articles, dry them, and rub over their surface with a little sweet oil. Ivory balls, umbrella tips, &c., may be dyed black in this manner.

Ostrich Feathers—These beautiful feathers are dyed black in the same manner as ivory, but, to prevent them being injured by the agitation of the water, they should be sewn up in a coarse cotton cloth bag. When colored they should be washed, then beaten with the palm of the hand upon a firm cushion until they are dry. This opens up their fibers and makes them look handsome.

Straw Hats are dyed black in the same manner as wood (like the ramrods,) only a solution of copperas is made up in a pail, and they are steeped in this for half an hour after they have been boiled in the strong logwood.

Horse Hair is dyed in the same manner as ivory, and so is human hair intended for wigs. These items we have no doubt will be of great service to many of our readers.

Tape Worm Trap.

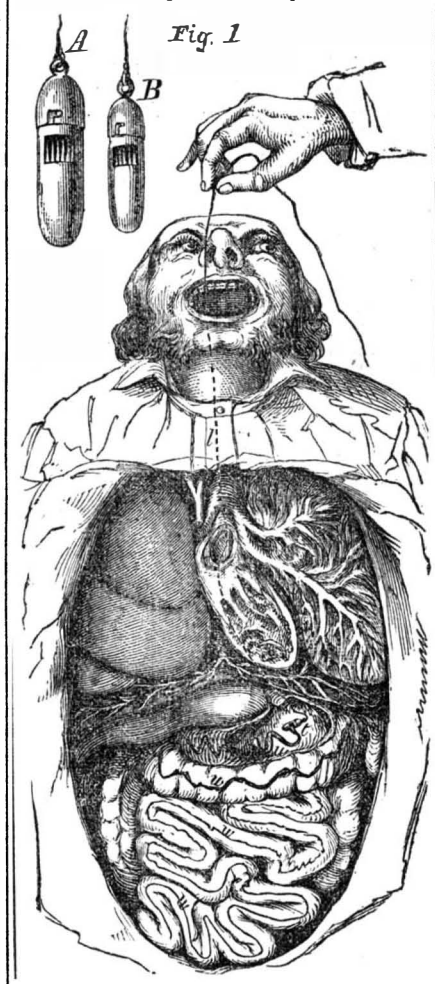

Fig. 1

The accompanying engravings are views of a trap and process for removing tape worms from the human stomach and intestines, for which (trap and process) two patents were granted to Dr. Alpheus Myers, of Logansport, Indiana, on the 14th of last November. The nature of the process and the manner of practicing it is represented in fig. 1. It shows the hand of the operator fishing for the tape worm.

A B represent two traps of full size for operating on patients of different ages. *w w* represent the intestines of the patient, and *u* the tape worm. *t* is the trap, which has been swallowed and taken into the stomach, and is suspended by a fine silk thread, *l*, in the hands of the operator. The tape worm is represented attacking the bait in the trap, *t*, and is on the point of being caught. Fig. 2 are enlarged figures of a trap to show its parts more fully. It is a neat small instrument of the shape A and B, fig. 1; it is made of very thin sheet gold or silver. A in fig. 2 shows all the parts of the trap—the inside part being in dotted lines; B of same figure shows the main outside tube with its catch pin and the coiled spring, *g*, removed; the spring is set at the bottom of B, when the trap, as in fig. 1, is ready for use; fig. 2, shows the small bait tube, *d*, with its bait fork, *e*; also the cap, C, which is placed over B; also catch, *b*. The thread, *h*, is attached to link, *i*, of the cap, C. The bait is placed on fork, *e*, of the small tube, *d*.

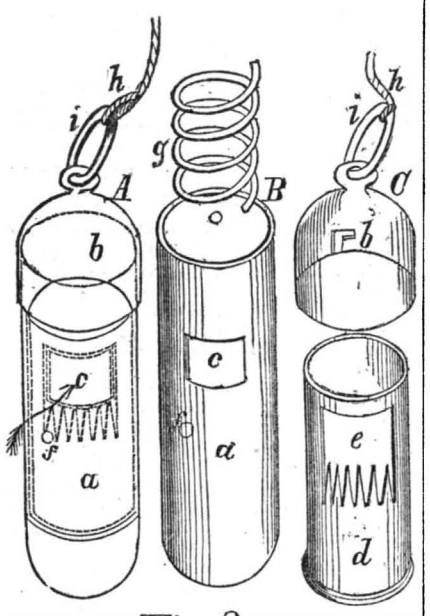

Fig. 2

This tube has a very small flange on its bottom edge. Tube, B, has an opening, *c*, in its side, and a small pin, *f*, projecting inside, about little more than a hair's-breadth. The coiled spring, *g*, is forced to the bottom of tube, B, under *a*, and the bait tube, *d*, placed in B, with its bottom resting on the coiled spring. Its flange at the bottom catches delicately on the pin, *f*; the bait fork, *e*, with its bait, when the instrument is ready for use, is opposite the opening, *c*, as shown, so that the tape worm, *t*, puts its head into the small opening, *c*, and attacks the bait. The process of removing a tape worm from the stomach is as follows:—The patient is first put upon a strict course of fasting for several days, and allowed nothing but water to allay thirst. The tape worm then becomes exceedingly hungry, and by instinct draws itself into the stomach to seek for that nourishment which is now denied it it the intestines (all intestine worms do this, and sometimes pass up into the throat.) The trap, A or B, fig. 1, is now baited with any nutritious food—such as a piece of cheese—and placed on fork, *e*, the points of which are very sharp and fine. The trap is then swallowed as shown in fig. 1, and the thread, *l*, fastened to some proper object, and he left at his ease for some hours, perhaps from six to twelve. During this period the tape worm will have attached its sucker-mouth to the bait, as shown, and by a little wriggling, it displaces the small flange of tube *d*, from the delicate pin *f*, and then the coiled spring, *g*, under it, forces up the inside bait-tube into the upper part of the tube, B, and the tape worm is pressed between the upper edge of opening *e*, against the fine prongs of fork *c*, and is thus transfixed and caught. The spring, *g*, is made of such tension that the worm is merely transfixed, and not cut through, which must be avoided. The patient can tell when the worm is captured. He rests for a few hours afterwards, and by careful and gentle drawing up of the trap, the worm is abstracted with it, and gently wound round a spool or quill. Great care must be exercised in drawing it up, so as not to break it.

The tape worm, or tænia, receives its name from its resemblance to a mason's tape. It is the worst of the various species of worms which afflict the human family. Some of them are exceedingly long; they vary from a few feet to 20, 30, 50, and even 100 feet. It is jointed, resembling a measuring tape spaced out in inches. Every joint of this worm is, in reality, a distinct worm: the creature is at first broad and short; when it multiplies in the bowels, the young adhere to it and each other endwise, so as to form a sort of chain, which lengthens as they continue to increase, and at last becomes injuriously long, hence merely breaking this worm does not destroy it, for any separate link is one entire worm, and cannot be injured by being separated from the others. This is the reason why great care must be exercised to remove the worm entire, and not to break it, for if but one link is left it propagates, and soon increases its tenacious brood, uniting them to itself. The tape worm is very detrimental to health; it cannot be otherwise. There have been some cases indeed, of persons having them without being sensibly affected, but these are exceptions to the rule.

The removal of the tape worm from the human body has always been a desideratum with physicians. The above figures certainly represent an original and ingenious method for removing them, and Dr. Myers, not long since, removed one fifty feet in length from a patient, who, since then, has had a new lease of life.

More information in relation to this invention may be obtained by letter addressed to the patentee.

Volcanic Mud Phenomenon.

On the 19th ult., as the the steamer *Tishomingo* was wending her way up the Ohio river, the officers and passengers on board of her beheld a remarkable upheaving of waters in the center of the stream. When about seventy-five miles below Louisville, they beheld a dense body of mud and water, some thirty or forty feet in diameter, thrown up, sowewhat after the manner of a fountain, to a hight of fifteen feet. It rose and sank several times.

Literary Notices.

Old Knickerbocker.—In this number for August, the merry poet, John G. Saxe, of Vermont, has a few sweet and pleasant lines on his thirty-ninth birth day, thus letting us know he will be forty next June; may he live sixty longer. Clark's Editors' Table is inimitable. His wit is rich, racy, and vigorous. Published by S. Hueston, Broadway.

Putnam's Monthly.—The leading article of this Magazine for August, is on Turkish Wars of former times; giving an account of an old fashioned English-American, Capt. John Smith, of famous memory. There is a curious article on animal talk, in which a dentist made a great display in pulling hundreds of cats teeth. The articles are all good, as usual, and worthy of this Magazine. Dix & Edwards, Publishers

Blackwood's Magazine.—The number of this far-famed Magazine, for this month, has just been issued by its enterprising American Publishers, Leonard Scott & Co., 54 Gold st. It contains "The Story of the Campaign," continued; the most reliable account of operations in the Crimea; also "Zaidee" continued, and a slasher on "the imperial policy of Russia." The concluding article is on "Reform in the British Social Service," and is a cutter. It is an able number.

The New York Quarterly.—The number of this solid periodical for this quarter, contains some very profound articles, The leader is on "The Last Days of Colonial Independence," and bears the stamp of ability. Another on "The Journalism of Great Britain and America," is also very instructive. From it we learn that the *Edinburg Gazette*, (still alive and thriving,) has been published since the year 1600. It is a good number. James G. Reed, Publisher, No. 348 Broadway.

Surveys from the Mississippi to the Pacific.—We are indebted to A. Campbell, C. C. in the War Department, for Reports of explorations and surveys to ascertain the most practicable route for a railroad to the Pacific. Such documents are of no small value to us, in obtaining information on subjects which we discuss in our columns. Our thanks are due to Mr. Campbell for his attention to us.

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